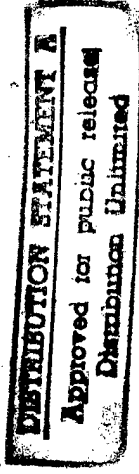
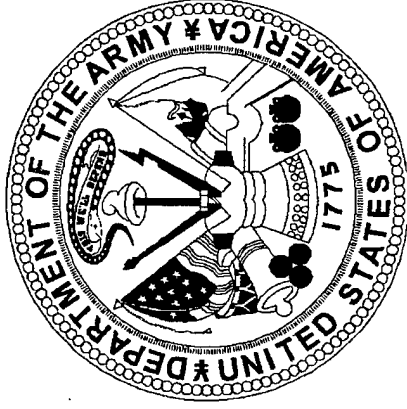


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Supporting Data FY 1999 Budget Estimate
Submitted to Congress - February 1998

DESCRIPTIVE SUMMARIES OF THE



19980319 098

RESEARCH, DEVELOPMENT, TEST AND EVALUATION
Army Appropriation, Budget Activities 4 and 5

Department of the Army
Office of the Secretary of the Army (Financial Management and Comptroller)

"READINESS THROUGH MODERNIZATION"

DTIC QUALITY INSPECTED 3

VOLUME II

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DESCRIPTIVE SUMMARIES FOR PROGRAM ELEMENTS
OF THE
RESEARCH, DEVELOPMENT, TEST AND
EVALUATION, ARMY
FY 1999
FEBRUARY 1998

VOLUME II
Budget Activities 4 and 5

Department of the Army
Office of the Assistant Secretary of the Army (Financial Management and Comptroller)

DTIC QUALITY INSPECTED 3

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FY 1999 RDT&E, ARMY
PROGRAM ELEMENT DESCRIPTIVE SUMMARIES

INTRODUCTION AND EXPLANATION OF CONTENTS

1. General. This section has been prepared for the purpose of providing information concerning the Army Research, Development, Test and Evaluation program. The Descriptive Summaries are comprised of R-2 (Budget Item Justification Sheet) and R-3 (RDT&E Program Element/Project Cost Breakdown) Exhibits which provide narrative information on all RDT&E program elements and projects for the FY 1997, 1998 and 1999 time period.

2. Relationship of the FY 1999 Budget Submission to the FY 1998 Budget submitted to Congress. This paragraph provides a list of program elements restructured, transitioned, or established to provide specific program identification.

A. Program Element Restructures. Explanations for these changes can be found in the narrative sections of the Program Element R-2/R-3 Exhibits.

OLD PE/PROJECT	NEW PROJECT TITLE	NEW PE/PROJECT
0601102A/S13, S14	Tele-Medicine/Soldier Status	0601102A/S19
0602105A, 0602120A, 0602211A,	Army After Next (AAN) Applied	0602308A/636
0602270A, 0602303A, 0602601A,	Research	
0602622A, 0602624A, 0602709A,		
0602784A, 0602786A, 0603004A	Tele-Medicine/Advanced Technology	0602787A/869
0602787A/870, 874, 878, 879	National Defense Center for	0708045A/E31
0602720A/829	Environmental Excellence	
	Army Evaluation Center	0605716A/D302
0605601A/D699, 0605604A/D734,		
0605706A/M542	Armament Group Support	0605801A/M76
0605802A/798	Force XXI Battle Command Brigade and	0203759A/D120
0203758A/D398	Below (FBCB2)	
	Hydra 70 Engineering and	0604802A/D705
0203802A/D701	Manufacturing Development	

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B. FY 1999 Developmental Transitions.

FROM	PROJECT TITLE	TO
PE/PROJECT		PE/PROJECT
0603313A/387	Multi-Purpose Individual Munition	0604802A/284

C. Establishment of New FY 1999 Program Elements/Projects. There are no major system new starts. Minor new initiatives for FY 1999, in addition to Congressionally directed initiatives for FY 1998, are shown below with asterisks. The remaining programs listed are outyear initiatives or restructures beyond FY 1999 or were previously funded from other Defense appropriations.

TITLE	PE/PROJECT
Passive Millimeter Wave Camera*	0602120A/A142
Dual Use Application Program (DUAP)	0602805A/A105
Commercial Technology to Reduce Costs*	0602720A/A908
Agriculturally Based Bioremediation*	0602720A/AF26
Computer Based Land Management*	0602720A/A917
Shortstop*	0602270A/A936
Best Centers*	0602720A/821
Pollution Prevention	0602720A/895
Thermophotovoltaic Generator*	0602705AAJ04
Air Defense Alerting Device on Bradley Stinger*	0602601A/AH72
Simulation Laboratory*	0602601A/H74
Joint Robotic Development*	0602601A/AH58
Plastic Cased Ammo*	0602624A/AJ03
Climate Change Fuel Cell Technology*	0602784A/AT46
Hardened Materials*	0602105A/AHMI
Center for Geosciences and Atmospheric Research (CGAR)*	0602784A/AT48
Orthopedic Implant Research	0602787A/D919
Prostate Cancer Research*	0602787A/D920
Ovarian Cancer Research*	0602787A/D921
Joint Tactical Radio System	0604280A/D152
Outrider Unmanned Aerial Vehicle*	0603003A/464
Trajectory Correctable Munition*	0603004A/A233
ASTAMIDS*	0603606A/A674

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C. Establishment of New FY 1999 Program Elements/Projects. (continued)

<u>TITLE</u>	<u>PE/PROJECT</u>
Stinger Universal Launcher*	0603003A/D448
Palletized Landing System Commercial Engine*	0603005A/A507
Metal Matrix Composites*	0603005A/A506
Volume Angiocat*	0603002A/D934
WRMAC Catheterization Lab*	0603002A/D931
Cooperative Teleradiology*	0603002A/D930
Artificial Lung Technology*	0603002A/D929
Advanced Trauma Care*	0603002A/D924
Prostate Diagnostic Image*	0603002A/D923
Emergency Telemedicine	0603002A/D922
Hypervelocity Missile TD	0603313A/A655
Commercial Operating and Support Savings Initiative (COSSI)	0604824A/D112
Auto Test Equipment Development	0604746/DL65
Combat Service Support Equipment - Engineering Development	0604804/DL43
Net Assessment Directorate	0605803A/M735
Munitions Survivability & Logistics	0605805A/D297
Tactical Unmanned Aerial Vehicle	0605204A/D114
Reliability, Maintainability and Sustainability (RMS)	0708045A/DE27

D. FY 1999 programs for which funding was shown in the FY 1998 President's Budget Submit (February 1997), but which are no longer funded.

<u>PE/PROJECT</u>	<u>TITLE</u>	<u>BRIEF EXPLANATION</u>
0602624A/H36	Fuze Technology	Program terminated
0603774A/598	LTASS	Funds transferred to system line.

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3. Classification. This document contains no classified data. Classified/Special Access Programs which are submitted offline are listed below.

0203735A/DC64	0602786A/AC60	0603322A
0203806A	0603003A/DB38/D391	0603710A/DC63/DC65
0203808A	0603005A/DC62/DC66	0603851A
0301359A	0603009A	0603854A/DC68
0602601A/AC83/DC84	0603013A	0604649A/DG15
0602104A	0603017A	0604328A/DC71
0602122A	0603018A	
0602712A/AC61	0603020A	

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Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Summary	Date: Feb 1998	
	Thousands of Dollars	
	FY 1997	FY 1998
Summary Recap of Budget Activities		
Basic Research	174,763	180,643
Applied Research	541,944	654,051
Advanced Technology Development	653,525	657,518
Demonstration and Validation	539,607	562,811
Engineering and Manufacturing Development	1,145,529	1,162,405
RDT&E Management Support	1,144,658	1,129,057
Operational Systems Development	<u>715,889</u>	<u>678,794</u>
Total Research Development Test & Eval Army	4,915,915	5,025,279
		<u>4,780,545</u>

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Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army Date: Feb 1998

Line Element No	Program Element Number	Item	Act	Thousands of Dollars		
				FY 1997	FY 1998	FY 1999
1	0601101A	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	1	14,108	13,678	14,902
2	0601102A	DEFENSE RESEARCH SCIENCES	1	117,041	121,827	137,399
3	0601104A	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	1	43,614	45,138	48,459
	Basic Research			174,763	180,643	200,760
4	0602104A	TRACTOR ROSE	2	2,987	0	6,000
5	0602105A	MATERIALS TECHNOLOGY	2	14,339	12,415	10,137
6	0602120A	SENSORS AND ELECTRONIC SURVIVABILITY	2	19,140	25,855	18,738
7	0602122A	TRACTOR HIP	2	7,796	7,018	11,685
8	0602211A	AVIATION TECHNOLOGY	2	20,637	22,211	29,746
9	0602270A	EW TECHNOLOGY	2	14,845	18,925	16,249
10	0602303A	MISSILE TECHNOLOGY	2	28,677	24,238	25,180
11	0602308A	MODELING & SIMULATION TECHNOLOGY	2	20,107	20,339	27,981
12	0602601A	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY	2	34,272	60,162	40,107
13	0602618A	BALLISTICS TECHNOLOGY	2	39,248	40,042	31,115
14	0602622A	CHEMICAL, SMOKE AND EQUIP DEFEATING TECHNOLOG	2	2,193	3,577	5,116
15	0602623A	JOINT SERVICE SMALL ARMS PROGRAM	2	4,388	9,000	5,229
16	0602624A	WEAPONS AND MUNITIONS TECHNOLOGY	2	20,993	29,905	29,489
17	0602705A	ELECTRONICS AND ELECTRONIC DEVICES	2	23,756	24,464	22,329
18	0602709A	NIGHT VISION TECHNOLOGY	2	16,935	16,712	19,157
19	0602712A	COUNTERMINE SYSTEMS DEVELOPMENT	2	7,052	10,272	10,715
20	0602716A	HUMAN FACTORS ENGINEERING TECHNOLOGY	2	15,781	16,723	13,369
21	0602720A	ENVIRONMENTAL QUALITY TECHNOLOGY	2	50,019	56,131	13,842
22	0602782A	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	2	13,893	16,197	19,746
23	0602783A	COMPUTER AND SOFTWARE TECHNOLOGY	2	6,419	658	2,185
24	0602784A	MILITARY ENGINEERING TECHNOLOGY	2	37,505	50,802	37,488
25	0602785A	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	2	9,196	8,736	8,602
26	602786A	WARFIGHTER TECHNOLOGY	2	23,513	18,088	18,661
27	0602787A	MEDICAL TECHNOLOGY	2	106,131	160,376	67,255
28	0602789A	ARMY ARTIFICIAL INTELLIGENCE TECHNOLOGY	2	2,122	1,205	1,164
29	0602805A	DUAL USE APPLICATIONS PROGRAM	2	0	0	20,000
	Applied Research		2	541,944	654,051	511,285

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Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army Date: Feb 1998

Line Program Element	No	Number	Item	Act	Thousands of Dollars		
					FY 1997	FY 1998	FY 1999
30	0603001A		WARFIGHTER ADVANCED TECHNOLOGY	3	23,211	34,361	32,969
31	0603002A		MEDICAL ADVANCED TECHNOLOGY	3	195,884	176,737	11,012
32	0603003A		AVIATION ADVANCED TECHNOLOGY	3	54,901	89,467	30,048
33	0603004A		WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	3	27,661	25,444	24,555
34	0603005A		COMBAT VEHICLE AND AUTOMATIVE ADVANCED TECH	3	28,160	40,796	54,435
35	0603006A		COMMAND, CONTROL, COMM ADVANCED TECHNOLOGY	3	29,627	25,708	20,109
36	0603007A		MANPOWER, PERSONNEL AND TRAINING ADV TECH	3	4,289	2,910	3,021
37	0603009A		TRACTOR HIKE	3	16,123	13,441	9,873
38	0603013A		TRACTOR DIRT	3	2,679	0	57
39	0603017A		TRACTOR RED	3	8,221	5,399	4,590
40	0603020A		TRACTOR ROSE	3	4,845	10,859	2,016
41	0603105A		MILITARY HIV RESEARCH	3	17,080	2,629	5,710
42	0603238A		AIR DEFENSE/PRECISION STRIKE TECHNOLOGY	3	19,291	12,773	9,973
43	0603270A		EW TECHNOLOGY	3	6,480	7,929	11,508
44	0603313A		MISSILE AND ROCKET ADVANCED TECHNOLOGY	3	93,739	90,468	86,096
45	0603322A		TRACTOR GEM	3	6,123	5,991	4,408
46	0603606A		LANDMINE WARFARE AND BARRIER ADV TECHNOLOGY	3	26,899	31,581	21,944
47	0603607A		JOINT SERVICE SMALL ARMS PROGRAM	3	8,825	9,015	5,173
48	0603654A		LINE-OF-SIGHT TECHNOLOGY DEMO	3	9,533	4,845	20,099
49	0603710A		NIGHT VISION ADVANCED TECHNOLOGY	3	28,584	18,705	23,960
50	0603734A		MILITARY ENGINEERING ADVANCED TECHNOLOGY	3	19,678	19,574	13,564
51	0603772A		ADV TACTICAL COMPUTER SCIENCE & SENSOR TECH	3	21,692	18,886	18,456
52	0603780A		SERDP/ENVIRONMENT SECURITY TECHNOLOGY PROGRAM	3	0	0	54,419
53	0604280A		JOINT TACTICAL RADIO SYSTEM	3	0	10,000	15,600
			Advanced Technology Development		653,525	657,518	483,595
54	0603018A		TRACTOR TREAD	4	2,267	0	0
55	0603308A		ARMY MISSILE DEFENSE SYSTEMS INTEGRATION	4	68,205	73,304	12,240
56	0603619A		LANDMINE WARFARE AND BARRIER - ADV DEV	4	27,164	24,299	6,778
57	0603627A		SMOKE, OBSCURANT AND TARGET DEFEATING SYS-AD	4	5,573	0	0
58	0603639A		ARMAMENT ENHANCEMENT INITIATIVE	4	56,687	37,127	26,526
59	0603640A		ARTILLERY PROPELLANT DEVELOPMENT	4	8,103	8,258	0
60	0603645A		ARMORED SYSTEMS MODERNIZATION-ADVANCED DEVEL	4	1,612	1,945	0

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Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army Date: Feb 1998

Program		Thousands of Dollars			
Line	Element	Act	FY 1997	FY 1998	FY 1999
No	Number				
	Item				
61	0603649A ENGINEER MOB EQUIP ADVANCED DEV	4	498	0	0
62	0603653A ADVANCED TANK ARMAMENT SYSTEM	4	11,144	8,704	8,928
63	0603713A ARMY DATA DISTRIBUTION SYTEM	4	25,699	20,526	17,281
64	0603745A TACTICAL ELECTRONIC SUPPORT SYSTEMS - ADV DEV	4	3,837	0	0
65	0603747A SOLDIER SUPPORT AND SURVIVABILITY	4	6,487	7,324	7,581
66	0603766A TAC EXPLOIT OF NAT CAP (TENCAP)-DEM/VAL TIARA	4	24,714	19,566	0
67	0603774A NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	4	2,254	2,848	2,681
68	0603790A NATO RESEARCH AND DEVELOPMENT (H)	4	9,495	8,866	11,161
69	0603801A AVIATION - ADV DEV	4	10,648	13,696	7,487
70	0603804A LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	4	7,100	6,574	17,478
71	0603805A CBT SERVICE SUPPORT CONTROL SYS EVAL & ANALYS	4	15,479	7,280	14,353
72	0603807A MEDICAL SYSTEMS - ADV DEV	4	9,730	6,555	11,414
73	0603851A TRACTOR EARL	4	2,922	1,851	966
74	0603854A ARTILLERY SYSTEMS DEMONSTRATION/VALIDATION	4	232,288	314,017	313,166
75	0603856A SCAMP BLOCK II (SPACE)	4	7,701	71	7,969
	Demonstration and Validation		539,607	562,811	466,009
76	0604201A AIRCRAFT AVIONICS	5	17,706	31,660	7,878
77	0604220A ARMED, DEPLOYABLE OH-58D	5	1,100	0	0
78	0604223A COMANCHE	5	325,299	272,187	367,823
79	0604270A EW DEVELOPMENT	5	69,067	84,180	85,989
80	0604321A ALL SOURCE ANALYSIS SYSTEM	5	37,463	26,094	28,081
81	0604325A FOLLOW-ON TO TOW	5	5,934	13,449	48,106
82	0604328A TRACTOR EARL	5	1,484	11	1,788
83	0604604A MEDIUM TACTICAL VEHICLES	5	5,719	3,614	0
84	0604609A SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ED	5	0	0	706
85	0604611A JAVELIN (AWWS-M)	5	5,855	7,771	5,277
86	0604619A LANDMINE WARFARE	5	25,355	19,189	23,189
87	0604622A FAMILY OF HEAVY TACTICAL VEHICLES	5	4,906	4,845	0
88	0604633A AIR TRAFFIC CONTROL	5	7,086	4,533	1,737
89	0604640A ADVANCED COMMAND AND CONTROL VEHICLE	5	7,545	10,532	0
90	0604641A TACTICAL UNMANNED GROUND VEHICLE	5	2,728	2,604	2,468
91	0604642A LIGHT TACTICLE WHEELED VEHICLE	5	3,409	0	0

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Department of the Army
FY 1999 RDT&E Program
Appropriation: 2040 A Research Development Test & Eval Army

Exhibit R-1

Line Element No Number		Item	Act	Thousands of Dollars			Date: Feb 1998
				FY 1997	FY 1998	FY 1999	
92	0604645A	ARMORED SYSTEMS MODERNIZATION (ASM)-ENG DEV	5	6,408	0	4,500	
93	0604649A	ENGINEER MOBILITY EQUIPMENT DEVELOPMENT	5	44,225	50,585	63,069	
94	0604710A	NIGHT VISION SYSTEMS - ENG DEV	5	33,970	35,052	21,311	
95	0604713A	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	5	73,404	60,053	62,218	
96	0604715A	NON-SYSTEM TRAINING DEVICES - ENG DEV	5	46,142	82,965	64,035	
97	0604716A	TERRAIN INFORMATION - ENG DEV	5	6,969	2,825	2,999	
98	0604726A	INTEGRATED METEOROLOGICAL SUPPORT SYSTEM	5	0	1,887	1,790	
99	0604739A	JTT/CIBS-M (TIARA)	5	4,588	4,360	4,447	
100	0604741A	AIR DEFENSE C2I - ENG DEV	5	19,577	21,181	6,476	
101	0604746A	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	5	8,868	8,220	7,030	
102	0604760A	DISTRIBUTIVE INTERACTIVE SIMULATIONS ENG DEV	5	17,618	20,249	2,766	
103	0604766A	TAC EXPLOIT NAT CAP (TENCAP)-EMD (TIARA)	5	14,839	17,807	44,674	
104	0604768A	BRILLIANT ANTI-ARMOR SUBMUNITION(BAT)	5	161,583	229,389	134,858	
105	0604770A	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM	5	9,406	6,726	5,503	
106	0604778A	POSITIONING SYS DEVEL (SPACE)	5	417	407	379	
107	0604780A	COMBINED ARMS TACTICAL TRAINER (CATT)	5	29,420	12,880	7,533	
108	0604801A	AVIATION - ENG DEV	5	4,331	4,951	6,599	
109	0604802A	WEAPONS AND MUNITIONS - ENG DEV	5	21,567	14,611	37,725	
110	0604804A	LOGISTICS & ENGINEER EQUIPMENT - ENG DEV	5	19,061	27,174	26,002	
111	0604805A	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - ED	5	13,315	10,710	16,404	
112	0604807A	MEDICAL MATERIEL/MED BIO DEFENSE EQUIPMENT ED	5	4,570	4,345	5,338	
113	0604808A	LANDMINE WARFARE/BARRIER - ENG DEV	5	9,342	13,818	46,905	
114	0604814A	SENSE AND DESTROY ARMOR - ENG DEV	5	9,677	10,847	20,813	
115	0604816A	LONGBOW	5	10,762	0	0	
116	0604817A	COMBAT IDENTIFICATION	5	16,889	19,026	13,471	
117	0604818A	ARMY TACTICAL COMM & CONT HARDWARE & SOFTWARE	5	35,495	19,184	32,929	
118	0604820A	RADAR DEVELOPMENT	5	0	0	2,786	
119	0604823A	FIREFINDER	5	2,430	2,484	19,822	
120	0604824A	COSSI	5	0	0	33,600	
121	0604854A	ARTILLERY SYSTEMS - ENGINEERING DEVELOPMENT	5	0	0	100	
		Engineering and Manufacturing Development		1,145,529	1,162,405	1,269,124	

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Department of the Army
FY 1999 RDT&E Program

Appropriation: 2040 A Research Development Test & Eval Army Date: Feb 1998

Line Element	Program	No	Number	Item	Act	Thousands of Dollars		
						FY 1997	FY 1998	FY 1999
122	0604256A			THREAT SIMULATOR DEVELOPMENT	6	11,146	16,480	11,935
123	0604258A			TARGET SYSTEMS DEVELOPMENT	6	9,661	11,328	13,127
124	0604759A			MAJOR TEST & EVALUATION INVESTMENT	6	39,698	39,200	40,284
125	0605103A			RAND ARROYO CENTER	6	20,550	16,534	16,718
126	0605301A			ARMY KWAJALEIN ATOLL	6	140,078	120,918	142,710
127	0605326A			CONCEPTS EXPERIMENTATION	6	0	0	17,441
128	0605502A			SMALL BUS INV RSCH/SMALL BUS TECH PILOT PROG	6	99,082	0	0
129	0605601A			ARMY TEST RANGES AND FACILITIES	6	128,036	118,327	119,553
130	0605602A			ARMY TECHNOLOGY & SUSTAINING INSTRUMENTATION	6	20,761	32,160	33,439
131	0605604A			SURVIVABILITY/LETHALITY ANALYSIS	6	29,362	31,308	30,498
132	0605605A			DOD HIGH ENERGY LASER SYS TEST FAC (HELSTF)	6	29,227	28,965	15,022
133	0605606A			AIRCRAFT CERTIFICATION	6	2,415	2,828	2,924
134	0605702A			METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	6	6,278	6,235	6,691
135	0605706A			MATERIEL SYSTEMS ANALYSIS	6	14,006	27,755	9,711
136	0605709A			EXPLOITATION OF FOREIGN ITEMS	6	6,962	7,523	4,031
137	0605712A			SUPPORT OF OPERATIONAL TESTING	6	44,900	76,807	66,320
138	0605716A			ARMY EVALUATION CENTER	6	0	0	25,526
139	0605801A			PROGRAMWIDE ACTIVITIES	6	58,310	79,626	64,588
140	0605802A			INTERNATIONAL COOPERATIVE RESEARCH AND DEV	6	1,494	0	0
141	0605803A			TECHNICAL INFORMATION ACTIVITIES	6	16,465	14,673	16,251
142	0605805A			MUNITIONS STANDARDIZATION EFFECTIVENESS & SAFETY	6	3,083	11,064	8,497
143	0605853A			ENVIRONMENTAL CONSERVATION	6	1,874	1,723	3,195
144	0605854A			POLLUTION PREVENTION	6	13,413	5,187	8,694
145	0605856A			ENVIRONMENTAL COMPLIANCE-RDT&E	6	52,716	56,576	44,116
146	0605876A			MINOR CONSTRUCTION (RPM) - RDTE	6	4,148	4,258	4,205
147	0605878A			MAINTENANCE AND REPAIR (RPM) - RDTE	6	66,869	83,751	49,233
148	0605879A			REAL PROPERTY SERVICES (RPS)	6	88,190	86,199	87,172
149	0605896A			BASE OPERATIONS-RDT&E	6	217,667	224,593	230,029
150	0605898A			MANAGEMENT HEADQUARTERS (RSCH & DEVELOPMENT)	6	18,035	25,039	4,683
151	0909999A			CLOSED ACCOUNT ADJUSTMENT	6	232	0	0
				RDT&E Management Support		1,144,658	1,129,057	1,076,593

Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army Date: Feb 1998

Line Element	Program No	Item	Act	Thousands of Dollars		
				FY 1997	FY 1998	FY 1999
152	0102419A	AEROSTAT JOINT PROGRAM	7	25,680	33,011	103,937
153	0203726A	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	7	37,507	37,455	35,111
154	0203735A	COMBAT VEHICLE IMPROVEMENT PROGRAMS	7	203,653	161,497	94,756
155	0203740A	MANEUVER CONTROL SYSTEM	7	27,166	24,510	28,923
156	0203744A	AIRCRAFT MODIFICATIONS/PRODUCT IMPROV PROGRAM	7	21,836	21,567	26,681
157	0203752A	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	7	3,734	2,849	2,948
158	0203758A	DIGITIZATION	7	98,124	94,103	45,007
159	0203759A	FORCE XXI BATTLE CMD, BRIGADE & BELOW	7	0	0	52,469
160	0203761A	FORCE XXI WARFIGHTING RAPID ACQUISITION PGM	7	16,640	43,126	99,528
161	0203801A	MISSILE/AIR DEFENSE PRODUCT IMPRV PROGRAM	7	60,882	30,443	11,252
162	0203802A	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	7	13,570	1,216	1,248
163	0203806A	TRACTOR RUT	7	3,030	2,046	0
164	0203808A	TRACTOR CARD	7	6,588	6,373	3,993
165	0208010A	JOINT TACTICAL COMMUNICATIONS PROG (TRI-TAC)	7	17,747	21,105	35,941
166	0208053A	JOINT TACTICAL GRD STATION (TIARA)	7	2,022	5,001	12,229
167	0301359A	SPECIAL ARMY PROGRAM	7	10,929	7,315	6,537
168	0303140A	COMMUNICATIONS SECURITY (COMSEC) EQUIPMENT	7	3,048	11,771	7,433
169	0303142A	SATCOM GROUND ENVIRO (SPACE)	7	37,665	48,939	53,897
170	0303150A	ARMY GLOBAL C2 SYS	7	18,877	14,581	17,543
171	0305114A	TRAFFIC CNTL/APPROACH/LANDING SYS (JPALS)	7	0	728	0
172	0305128A	SECURITY AND INTELLIGENCE ACTIVITIES	7	464	484	950
173	0305204A	TACTICAL UNMANNED AERIAL VEHICLE	7	0	0	75,636
174	0603778A	MLRS PRODUCT IMPROVEMENT PROGRAM	7	61,721	36,171	20,244
175	0708045A	MANUFACTURING TECHNOLOGY	7	45,006	64,278	30,511
176	1001018A	NATO JSTARS - TIARA	7	0	10,225	6,405
		Operational Systems Development		715,889	678,794	773,179
Total		Research Development Test & Eval Army		4,915,915	5,025,279	4,780,545

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5	0602120A Sensors and Electronic Survivability	101
6	0602211A Aviation Technology	111
7	0602270A Electronic Warfare (EW) Technology	121
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39	0603606A Landmine Warfare and Barrier Advanced Technology	449
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88	Integrated Meteorological System (IMETS) (TIARA)	852
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90	Air Defense Command, Control, Intelligence - Engineering Development	860
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92	Distributive Interactive Simulations - Engineering Development	872
93	Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	886
94	Brilliant Anti-Armor (BAT) Submunition	890
95	Joint Surveillance/Target Attack Radar System	910
96	Positioning Systems Development (SPACE)	916
97	Combined Arms Tactical Trainer (CATT)	920
98	Aviation - Engineering Development	924
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Aircraft Engine Component Improvement Program	0203752A	1362
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All Source Analysis System (TIARA)	0604321A	716
Armament Enhancement Initiative	0603639A	515
Armed, Deployable OH-58D	0604220A	677
Armored Systems Modernization - Advanced Development	0603645A	527
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Army Global Command and Control System (AGCCS)	0303150A	1466
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Joint Tactical Communications Program (TRI-TAC)	0208010A	1420
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Landmine Warfare and Barrier Advanced Technology	0603606A	449
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Military Engineering Advanced Technology	0603734A	469
Military Engineering Technology	0602784A	249
Military Human Immunodeficiency Virus (HIV) Research	0603105A	411
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Missile/Air Defense Product Improvement Program	0203801A	1392
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SCAMP BLKII (SPACE)	0603856A	667
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Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)	0603766A	577
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UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603308A Army Missile Defense Systems

Integration

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	68205	73304	12240	12226	12202	15240	15458	Continuing	Continuing
D989 Nautilus/THEL	46392	49385	0	0	0	0	0	0	62849
D990 Space and Missile Defense (SMD) Integration	2748	2602	2989	3048	3110	3171	3236	Continuing	Continuing
D997 Space and Missile Defense Battle Lab (SMDBL)	19065	21317	9251	9178	9092	12069	12222	Continuing	Continuing

Mission Description and Budget Item Justification: In an 18 April 1997 Memorandum of Agreement between the US Army Training and Doctrine Command (TRADOC) and the US Army Space and Strategic Defense Command (USASSDC), USASSDC was designated the specified proponent for space and National Missile Defense (NMD) and the overall integrator for Theater Missile Defense (TMD). In response to this designation, the Missile Defense Battle Integration Center (MDBIC) and other existing USASSDC elements were reorganized and merged to form the Space and Missile Defense Battle Lab (SMDBL). The SMDBL is chartered to develop warfighting concepts, focus military science and technology research, and conduct warfighting experiments. In addition, this program element funds the integration and synchronization of the functions, activities, events, and actions associated with space and NMD Doctrine, Training, Leader development, Organization, Materiel development and Soldiers (DTLOMS) development and implementation; as well as, the systems analysis, studies, and experimentation designed to validate and integrate the pillars of TMD: active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions. Finally, this program element funds the completion of the joint U.S./Israeli Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstration (ACTD). Work in this program element is dedicated to efforts to demonstrate general military utility to include demonstration and validation in the area of TMD and is appropriately funded in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603308A Army Missile Defense Systems
Integration

PROJECT

D989

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D989 Nautilus/THEL	46392	49385	0	0	0	0	0	0	62849

A. Mission Description and Justification: These funds will complete the Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstration (ACTD) and field testing at the High Energy Laser Systems Test Facility (HELSTF). The THEL ACTD is a joint U.S./Israel program to design, fabricate, and test a tactical-sized THEL demonstrator to evaluate the effectiveness of high energy lasers (HELs) to defeat the threat posed by Katyusha and similar short range artillery rockets. The THEL ACTD is an integration effort that supports the active defense pillar of Theater Missile Defense.

Acquisition Strategy: The THEL ACTD has been assigned an urgent priority by the Secretary of Defense. A sole source letter contract was executed with TRW, Inc. to deliver the THEL demonstrator by 31 Mar 1998. The letter contract was definitized on 19 Jan 97. A change order to this contract is planned to include field testing of the demonstrator at HELSTF, to be completed by 1 Oct 98.

FY 1997 Accomplishments:

- 41181 Continued THEL ACTD design and fabrication.
- 1500 Conducted system engineering, analysis and subsystem integration activities.
- 2611 Conducted program management.
- 1100 Provided government furnished property.
- Total 46392

FY 1998 Planned Program:

- 7700 Complete the THEL demonstrator integration and testing at TRW.
- 8257 Conduct system engineering, analysis, system integration activities, and field test support.
- 29600 Complete integration at HELSTF and conduct field testing.
- 2590 Conduct program management.
- 1238 Small Business Innovative Research/Small Business Technology Transfer Programs.
- Total 49385

FY 1999 Planned Program: Project not funded in FY 1999

Project D989

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Exhibit R-2 (PE 0603308A)

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603308A Army Missile Defense Systems

D989

Integration

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
44058	16457	0
44058	50957	
+2334	-1572	
46392	49385	0

Change Summary Explanation: Funding: FY 1998 Congress added field testing at HELSTF (+34500); undistributed Congressional reductions (-1,572).

C. Other Program Funding Summary

THEL ACTD OSD PE 0603750D
THEL - Israel
THEL - HELSTF PE 0605605

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To</u>	<u>Total</u>
3520							<u>Cost</u>	3520
14500	14100						<u>Compl</u>	28600
	9461							9461

D. Schedule Profile

Initiate Long Leads & Fabrication
Complete Fabrication/Integration
Complete TRW THEL ACTD Testing
Complete HELSTF field testing

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
1	4	1	4	1	2	4
2	3	2	3	4	3	3
X*						
		X				
		X				
			X			

*Milestone Complete

Project D989

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0603308A Army Missile Defense Systems
IntegrationPROJECT
D989

4 - Demonstration and Validation

A. Project Cost Breakdown

THEL Demonstrator	FY 1997	FY 1998	FY 1999
Program Management	43781	46795	
Total	2611	2590	
	46392	49385	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Method/Type

Award or

Obligation

Date

Performing

Activity

EAC

Project

Office

EAC

Total

Prior to

FY 1997

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

78481

37300

41181

2600

9495

2611

2590

46392

49385

90576

5201

95777

78481

12095

5201

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE
February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
D990

4 - Demonstration and Validation

0603308A Army Missile Defense Systems

Integration

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D990 Space and Missile Defense (SMD) Integration	2748	2602	2989	3048	3110	3171	3236	Continuing	Continuing

A. Mission Description and Justification: In an 18 April 1997 Memorandum of Agreement between the US Army Training and Doctrine Command (TRADOC) and the US Army Space and Strategic Defense Command (USASSDC), USASSDC was designated the specified proponent for space and National Missile Defense (NMD) and the overall integrator for Theater Missile Defense (TMD). This project funds the Force Development and Integration Center, a major support element of USASSDC, created to execute the integration and synchronization of the functions, activities, events, and actions associated with space and NMD Doctrine, Training, Leader development, Organization, Materiel development and Soldiers (DTLOMS) development and implementation. In addition, this project funds systems analysis, studies, and experimentation designed to validate and integrate the pillars of TMD: active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions. Finally, this project funds the production of hardware and software solutions, doctrinal and procedural solutions, interfaces, and architectures for TMD. These inter-pillar and intra-pillar products, required to accomplish the integrated TMD mission, exceed the scope of other programs. This program supports the milestone decisions for active defense missile and C4I systems, as well as Aviation and Artillery attack operation systems and passive missile defense materiel solutions.

Acquisition Strategy: Program is continuous. Planned accomplishments will be conducted by various performers.

FY 1997 Accomplishments:

- 2748 Planned, developed, and conducted management oversight of testing and exercise prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues.
- Total 2748

FY 1998 Planned Program:

- 2536 Integrate and synchronize the functions, activities, events, and actions associated with space and NMD DTLOMS development and implementation; and plan, develop, and conduct management oversight of testing and exercise prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues.
- 66 Small Business Innovative Research/Small Business Technology Transfer Programs.
- Total 2602

Project D990

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																								
BUDGET ACTIVITY	PROJECT																										
4 - Demonstration and Validation	D990																										
PE NUMBER AND TITLE		0603308A Army Missile Defense Systems Integration																									
<p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 2989 Integrate and synchronize the functions, activities, events, and actions associated with space and NMD DTLOMS development and implementation; and plan, develop, and conduct management oversight of testing and exercise prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues. <table border="0"> <tr> <td>Total</td> <td>2989</td> <td></td> <td></td> </tr> </table> <p>B. Project Change Summary</p> <table border="0"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>2823</td> <td>2685</td> <td>2663</td> </tr> <tr> <td>Appropriated Value</td> <td>2823</td> <td>2685</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-75</td> <td>-83</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>2748</td> <td>2602</td> <td>2989</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: FY 1999 increased (+326) to cover civilian pay.</p> <p>C. Other Program Funding Summary: There are no other related efforts.</p> <p>D. Schedule Profile: Due to the continuous nature of these efforts, milestones or events are not applicable.</p>				Total	2989				FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	2823	2685	2663	Appropriated Value	2823	2685		Adjustments to Appropriated Value	-75	-83		FY 1999 President's Budget	2748	2602	2989
Total	2989																										
	FY 1997	FY 1998	FY 1999																								
FY 1998/1999 President's Budget	2823	2685	2663																								
Appropriated Value	2823	2685																									
Adjustments to Appropriated Value	-75	-83																									
FY 1999 President's Budget	2748	2602	2989																								

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603308A Army Missile Defense Systems

D990

Integration

A. Project Cost Breakdown

Program Management Support

Total

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
2748	2602	2989
2748	2602	2989

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Contract

Government Method/Type

Performing or Funding Award or

Activity Vehicle Date Obligation

Product Development Organizations

Support and Management Organizations

Govt Support and MIPR Monthly

Support Contracts CPFF

Test and Evaluation Organizations

Government Furnished Property:

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Budget to Complete</u>	<u>Total Program</u>
Project Office EAC								
N/A				2748	2602	2989	Cont	8339
N/A								
				2748	2602	2989		8339
				2748	2602	2989		8339

Project D990

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Exhibit R-3 (PE 0603308A)

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998						
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
4 - Demonstration and Validation		0603308A Army Missile Defense Systems Integration		D997						
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D997 Space and Missile Defense Battle Lab (SMDBL)		19065	21317	9251	9178	9092	12069	12222	Continuing	Continuing
<p>A. Mission Description and Justification: This project funds the Space and Missile Defense Battle Lab (SMDBL), (formerly the Missile Defense Battle Integration Center (SMDBIC). The SMDBL is chartered to develop warfighting concepts, focus military science and technology research, and conduct warfighting experiments. It will provide users and materiel developers a synthetic battlefield context for integrating missile defense and space assets; supporting requirement activities and providing distributed, netted computing resources, models and simulations efforts for warfighter exercises, analytical and virtual prototyping activities. To accomplish this, the SMDBL will concentrate on: Experiments, Exercises and Training; Modeling and Simulation (M&S); Concepts and Initiatives; Analysis; the Synthetic Battlefield Environment (SBE); the Extended Air Defense Testbed (EADTB); and the Extended Air Defense Simulation (EADSIM).</p> <p>Acquisition Strategy: Program is continuous. Planned accomplishments will be conducted by various performers.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 6100 Participated in/supported Army and joint exercises/training and warfighting experiments, including Optic Windmill, Prairie Warrior, the Confederation Test, Coherent Defense, Army Experiment 4, and JTFEX 98-1. 4193 Completed additional development of the SBE, to include various interfaces to enhance the realism and fidelity of missile defense training, exercises, and testing. 2078 Conducted "stand alone" training and further developed AAR capabilities for Force XXI command and control entities. 3943 Performed missile defense studies and analyses by providing enhancements/developments to advanced models and simulations, incorporating existing testbeds and migrating to the DoD's High-Level Architecture (HLA). 2751 Provided modeling, simulation, and advanced visualization capabilities for senior decision makers via the Warfighting Analysis and Integration Center (WAIC). <p>Total 19065</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 6235 Participate in and/or conduct space and missile defense related experiments and demonstrations, including Corps AWE, Space support to Corps Deep Operations Control Cell (DOCC), Space Based Imagery evaluations, Force Warring of Ballistic Missiles, and others. Includes development of experiment hardware/software integration Center (HSIC). 										

Project D997

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603308A Army Missile Defense Systems

D997

Integration

FY 1998 Planned Program: (continued)

- 4156 Provide for development and/or enhancements of space and missile defense models, simulations, and advanced visualization capabilities, including the Synthetic Battlefield Environment (SBE).
- 6230 Participate in/support Army and joint exercises including (Roving Sands 98, Ulchi Focus Lens, Home Station Training, etc.).
- 2078 Provide space and missile defense analytical support, studies, evaluations, and assessments to, Army, and DoD elements
- 2084 Provide the SMDBL with M&S infrastructure to support experimentation, exercise, training, and analysis programs, including conversion to HLA, V&V of models and simulations, M&S domain management, M&S master plans.
- 534 Small Business Innovation Research/Small Business Technology Transfer Programs.
- Total 21317

FY 1999 Planned Program:

- 5594 Conduct battle lab experiments and exercises focusing on space and missile defense operational and integration issues.
- 1360 Continue development of virtual prototypes of potential battlefield systems and high fidelity synthetic battlefield environments.
- 930 Implement and utilize long-haul, distributed after action review capabilities; maintain M & S infrastructure required for experimentation, exercise & analysis programs.
- 1367 Conduct follow-on missile defense and space operation support studies and analyses.
- Total 9251

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
19581	4996	9974
19581	21996	
-516	-679	
19065	21317	9251

Change Summary Explanation: Funding: FY 1998 Congressional increase (+17000) for the SMDBL; undistributed Congressional reductions (-679).

C. Other Program Funding Summary: There are no other related efforts.D. Schedule Profile: Due to the continuous nature of these efforts, milestones or events are not applicable.

Project D997

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
4 - Demonstration and Validation		D997	
PE NUMBER AND TITLE		0603308A Army Missile Defense Systems Integration	
A. <u>Project Cost Breakdown</u>			
SMDBL Operations	FY 1997	FY 1998	FY 1999
	19065	21317	9251
Total	19065	21317	9251
B. <u>Budget Acquisition History and Planning Information:</u> Not Applicable.			
Project D997		Exhibit R-3 (PE 0603308A)	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603619A Landmine Warfare and Barrier -
Advanced Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	27164	24299	6778	3877	6546	7628	8504	Continuing	Continuing
D005 Landmine Advanced Development	0	9650	3946	3877	0	0	0	0	17473
D606 Countermine/Barrier Advanced Development	27164	14649	2832	0	6546	7628	8504	Continuing	Continuing

Mission Description and Budget Item Justification: This program element provides for advanced development of new mine and countermine systems by prototyping modern munitions technology, advanced development sensors, logic networks, fuzes, power sources, warhead components and modules into complete systems. It provides for advanced development of Non-Self-Destructing Anti-Personnel Landmine Alternatives (NSD-A) and the Intelligent Combat Outpost (Raptor) which will significantly enhance minefield effectiveness through coordinated attack/tactics and elimination of overwatch forces. It also provides for the initiation and/or continuation of advanced development of the Airborne Stand-off Minefield Detection System (ASTAMIDS), the Handheld Stand-off Minefield Detection System (HSTAMIDS), Ground Stand-off Minefield Detection System (GSTAMIDS) and for mine neutralization with the Explosive Stand-off Minefield Breacher (ESMB), and Anti-personnel Obstacle Breaching System (APOBS). This program element supports Program Definition and Risk Reduction (PDRR) efforts used to demonstrate and validate general military utility and is, therefore, appropriately placed in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603619A Landmine Warfare and Barrier - Advanced Development								D005	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D005	Landmine Advanced Development	0	9650	3946	3877	0	0	0	0	17473	
<p>A. Mission Description and Justification: Intelligent Combat Outpost (Raptor) will improve the capability of smart mines/munitions used by the United States Army and will enhance the effectiveness of current and future mines/munitions by providing real time targeting data, increased situational awareness, and coordinated attack capabilities while eliminating the need for overwatch forces. NSD-A program will identify and develop alternatives to Non-Self Destructing Anti-Personnel landmines.</p> <p>Acquisition Strategy: For Raptor, a Sole Source PDRR contract will be awarded to Textron Defense Systems (Wide Area Munition developer). Decision to continue sole source into EMD phase or initiate a competitive solicitation will be evaluated based on PDRR phase results. For NSD-A 12 solicitation respondents will be requested to submit proposals for their alternative concepts. CPIF contracts for two of the best proposals will be awarded for the Early User Experiment (EUE) Phase. At the conclusion of the EUE one contractor will be selected to continue into the EMD and Production Phases.</p> <p>FY 1997 Accomplishments: Project not funded in FY 1997</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 1000 Conduct Raptor interoperability study, trade-off analysis, system integration/analyses, and evaluate methods for Identification, Friend or Foe (IFF). • 1265 Initiate design and development of Raptor gateway, advanced acoustic sensor, and control station. • 950 Initiate Raptor software algorithm development. • 344 Raptor Test and evaluation. • 2000 NSD-A solicitation preparation, white paper evaluations, and alternative concept proposal preparation and evaluation • 4000 NSD-A Early User Experiment • 91 Small Business Innovative Research/Small Business Technology Transfer Programs Total 9650 											

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February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603619A Landmine Warfare and Barrier -

D005

Advanced Development

FY 1999 Planned Program:

- | | |
|-------|--|
| 987 | Continue design and development of gateway, advanced acoustic sensor, and control station. |
| 963 | Continue software algorithm development. |
| 850 | Fabricate components for test and evaluation. |
| 500 | Conduct gateway, sensor and control station test and evaluation. |
| 646 | System integration and analysis. |
| Total | 3946 |

B. Project Change Summary

FY 1998/99 President's Budget	0	3767	4258
Appropriated Value		3767	
Adjustments to Appropriated Value		5883	
FY 1999 President's Budget	0	9650	3946

Change Summary Explanation:

Funding: FY98 increase of 5883 is a 6000 reprogramming for NSD-A and a reduction of 117 due to undistributed Congressional reductions.

C. Other Program Funding Summary

RDTE, A Budget Activity 5
PE 0604808, Project D016, Mine Systems
Engineering Development

D. Schedule Profile

Complete Raptor Tradeoff Studies
Conduct Raptor contractor testing
NSD-A MS II

[illegible]

Project D005

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RD T&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603619A Landmine Warfare and Barrier - Advanced Development

**PROJECT
D005**

A. Project Cost Breakdown

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
<u>A. Project Cost Breakdown</u>			
Primary Hardware Development		6515	1793
Test and Evaluation		344	1100
Government Engineering Support		2213	853
Government Program Management		487	200
SBIR/STTR		91	
Total	0	9650	3946

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TBD	TBD	TBD					6515	1793	Cont	8308
Support and Management Organizations										
ARDEC							2213	853	Cont	3066
PM-MCD							578	200	Cont	778
Test and Evaluation Organizations										
TECOM							344	1100	Cont	1444

Government Furnished Property: None

Subtotal Product Development	6515	1793	8308
Subtotal Support and Management	2791	1053	3844
Subtotal Test and Evaluation	344	1100	1444
Total Project	9650	3946	13596

Project D005

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603619A Landmine Warfare and Barrier -

D606

Advanced Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D606 Countermine/Barrier Advanced Development	27164	14649	2832	0	6546	7628	8504	Continuing	Continuing

A. Mission Description and Justification: This project provides for advanced development of new countermine systems by prototyping advanced sensors for evaluation of neutralizing, clearing, breaching and detection concepts which will enhance the U.S. capability in countermine warfare. The program includes the Airborne Stand-off Minefield Detection System (ASTAMIDS), the Handheld Stand-off Minefield Detection System (HSTAMIDS), Ground Stand-off Minefield Detection System (GSTAMIDS), Explosive Stand-off Minefield Breacher (ESMB), and Anti-personnel Obstacle Breaching System (APOBS). The program provides for proof-of-principle for these systems.

Acquisition Strategy: ASTAMIDS, HSTAMIDS, and GSTAMIDS - competing contractors (2 for each project) competitively selected for PDRR phase which will lead to a down select for the EMD phase. Successful EMD contractor will be awarded initial production contract (sole source) with multiple option year buys. ESMB competitively selected PDRR phase contractor will be awarded a sole source EMD contract upon completion of PDRR phase and MDA approval. Sole source Production contract with multiple options is anticipated for successful EMD contractor.

FY 1997 Accomplishments:

- 7980 Completed initial PDRR design for HSTAMIDS
- 1445 Fabricated HSTAMIDS Test hardware
- 2700 Conducted System Trade off analysis and complete ESMB PDRR design
- 3000 Fabricated ESMB Test hardware and conduct contractor/government testing
- 551 Prepared ESMB MS II IPR documentation
- 10145 Completed ASTAMIDS design, fabricate hardware, and conduct EUT&E
- 1300 Evaluated Alternative ASTAMIDS Minefield Detection /Sensor Technologies
- 43 Prepared APOBS MS III and contract solicitation documentation
- Total 27164

FY 1998 Planned Program:

- 5344 Complete HSTAMIDS PDRR design and conduct contractor testing
- 1393 Conduct TT/EUT&E for HSTAMIDS
- 805 Prepare HSTAMIDS MS II documentation and EMD contract solicitation
- 3507 Fabricate GSTAMIDS prototype hardware and contractor management

Project D606

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																																																																																
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																																																																	
4 - Demonstration and Validation	0603619A Landmine Warfare and Barrier - Advanced Development	D606																																																																																	
<p>FY 1998 Planned Program: (continued)</p> <ul style="list-style-type: none"> • 1032 Prepare GSTAMIDS MS II documentation and EMD contract solicitation • 1000 Evaluate GSTAMIDS Technology and Hardware at ATD/ Conduct Source Selection Evaluation Board • 1200 ESMB System Tradeoff/Risk Reduction Analysis and MSII Documentation Preparation • 368 Small Business Innovative Research/Small Business Technology Transfer Programs Total 14649 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 500 Conduct source selection board for GSTAMIDS EMD • 2332 Develop GSTAMIDS Test targets and generate data deliverables Total 2832 <p>B. Project Change Summary</p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/99 President's Budget</td> <td>27860</td> <td>15115</td> <td>6956</td> </tr> <tr> <td>Appropriated Value</td> <td>28464</td> <td>15115</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-1300</td> <td>-466</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>27164</td> <td>14649</td> <td>2832</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: In FY 99 funding decrease (-4124) relates to transfer of funds from GSTAMIDS 0603619A/D606 to GSTAMIDS 0604808A/D415 in anticipation of accelerated PDORR phase. Schedule : GSTAMIDS MS II rescheduled from 3QFY01 to 2QFY99</p> <p>C. Other Program Funding Summary</p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>To Compl</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>RDTE, A Budget Activity 5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>PE 0604808A, Project D415, Mine Neutralization/ Detection</td> <td>2100</td> <td>8318</td> <td>26905</td> <td>29389</td> <td>42727</td> <td>26636</td> <td>24562</td> <td>Cont</td> <td>Cont</td> </tr> <tr> <td>OPA 3, A Appropriation</td> <td></td> <td></td> <td></td> <td>5749</td> <td>6681</td> <td></td> <td></td> <td></td> <td>12430</td> </tr> <tr> <td>E72800, APOBS</td> <td></td> <td></td> <td></td> <td></td> <td>290</td> <td>432</td> <td>440</td> <td></td> <td></td> </tr> <tr> <td>M80300, ESMB</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Project D606</p>					FY 1997	FY 1998	FY 1999	FY 1998/99 President's Budget	27860	15115	6956	Appropriated Value	28464	15115		Adjustments to Appropriated Value	-1300	-466		FY 1999 President's Budget	27164	14649	2832		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	RDTE, A Budget Activity 5										PE 0604808A, Project D415, Mine Neutralization/ Detection	2100	8318	26905	29389	42727	26636	24562	Cont	Cont	OPA 3, A Appropriation				5749	6681				12430	E72800, APOBS					290	432	440			M80300, ESMB									
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PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603619A Landmine Warfare and Barrier -
Advanced Development

D606

C. Other Program Funding Summary

R68200, HSTAMIDS
 R68100, GSTAMIDS
 AMMO, A Appropriation
 E81400, ESMB

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Comp	To	Total
1	2	3	4	1	2	3	4			
	X*									
Completed ASTAMIDS										
Developed/Fabricated of Prototype										
Initiated Development Tests and Early User										
Tests of ASTAMIDS										
Milestone II Review for ESMB										
Conducted MS I for GSTAMIDS										
Conduct MS II for GSTAMIDS										
Complete TT/IOT&E for HSTAMIDS										
Conduct MS II for HSTAMIDS										

*Denotes completed effort

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4 - Demonstration and Validation

PE NUMBER AND TITLE

0603619A Landmine Warfare and Barrier -

**PROJECT
D606**

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
A. Project Cost Breakdown			
Development Primary Hardware	18484	8242	1832
Test and Evaluation	2633	2125	0
Government Engineering	4711	3224	700
Government Program Management	1336	690	300
SBBR/STTR		368	
Total	27164	14649	2832

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Raytheon	CPIF	Nov 93	29452	29452	25204	4248			0	29452
Northrop/Grumman	CPIF	Nov 93	19129	19129	17929	1200			0	19129
Coleman Research	CPIF	May 96	5886	5886	873	3007	2006		0	5886
GDE	CPIF	May 96	9349	9349	1645	5168	2536		0	9349
Tracor	CPIF	Dec 95	14518	14518	10695	2623	1200			14518
Computer Devices	CPIF	Nov 97	891	891	0	0	891			891
TBD	TBD	TBD					700	1832	Cont	2532
Misc.	Various	Various				2238	909		Cont	3147
Support and Management Organizations										
NNVSD/CECOM						3562	2847	700	Cont	7109
Misc.						2455	1435	300	Cont	4190
Test and Evaluation Organizations										
TECOM						2663	2125		Cont	4788

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			
4 - Demonstration and Validation	0603619A Landmine Warfare and Barrier - Advanced Development	D606		
Government Furnished Property: None				
		Total Prior to FY 1997	FY 1997 18484 6017 2663 27164	FY 1998 8242 4282 2125 14649
			FY 1999 1832 1000 2832	Budget to Complete
				Total Program 84904 11299 4788 100991
	Subtotal Product Development			
	Subtotal Support and Management			
	Subtotal Test and Evaluation			
	Total Project			
Project D606		Exhibit R-3 (PE 0603619A)		

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BUDGET ACTIVITY										February 1998
PE NUMBER AND TITLE										
4 - Demonstration and Validation										
0603627A Smoke, Obscurant and Target Defeating System - Advanced Development										
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	5573	0	0	0	0	0	0	Continuing	Continuing
DE78	Target Defeating Systems	0	0	0	0	0	0	4473	Continuing	Continuing
DE79	Smoke, Obscurant - Advanced Development	5573	0	0	0	0	0	0	0	5573

Mission Description and Budget Item Justification: U.S. Forces must be able to effectively neutralize and degrade energy weapon systems and threat electro-optical systems/smart weapons that operate in the full range of the electro-magnetic spectrum. These program elements support the demonstration/validation (DEMVVAL) of logistically supportable, high performance smoke and obscurant agents, munitions and devices to improve the survivability of the combined arms force and complement combined weapons systems. Improvements are sought across the entire multi-spectral range from visual through infrared (IR) and millimeter wavelengths (MMW) radar for incorporation into self-protection large area and project smoke systems. The smoke obscuration technologies supported by this program enhance smoke systems as combat multipliers. This program element focuses on efforts associated with advanced technology development used to demonstrate general military utility to include demonstration and validation in the area of Smoke, Obscurant & Equip Systems Engineering and is correctly placed in Budget Activity 4.

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BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																				
4 - Demonstration and Validation		0603627A Smoke, Obscurant and Target Defeating System - Advanced Development								DE79																				
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
DE79 Smoke, Obscurant - Advanced Development		5573	0	0	0	0	0	0	0	5573																				
<p>A. Mission Description and Budget Item Justification: The Light Vehicle Obscuration Smoke System (LVOSS) is a self-defense smoke/obscurant device externally mounted on the vehicle. The LVOSS is expected to counter threat weapon systems operating in the visual and near infrared portions of the electro-magnetic spectrum. The LVOSS consists of the XM7 lightweight discharger and installation kits for the infantry HMMWV equipped TOW and MP HMMWV variants.</p> <p>Acquisition Strategy: Project DE79 Smoke, Obscurant-Advanced Development: The Light Vehicle Obscurant Smoke System (LVOSS) is an in-house effort and was type classified from the demonstration/validation phase.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 1588 LVOSS-Fabricated Production Qualification Test (PQT) Hardware. • 2258 LVOSS-Conducted PPQT and Systems Operational Modeling. • 1727 LVOSS-Completed Systems Engineering, Planning and Documentation. <p>Total: 5573</p> <p>FY 1998 Planned Program: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>B. Project Change Summary</p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>6246</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>6125</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>-552</td> <td>0</td> <td>0</td> </tr> <tr> <td></td> <td>5573</td> <td></td> <td></td> </tr> </table>											FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	6246	0	0	Adjustments to Appropriated Value	6125			FY 1999 President's Budget	-552	0	0		5573		
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																											
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FY 1999 President's Budget	-552	0	0																											
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Project DE79

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PROJECT

4 - Demonstration and Validation

**0603627A Smoke, Obscurant and Target Defeating
System - Advanced Development**

[illegible]

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	PROJECT
BUDGET ACTIVITY			PE NUMBER AND TITLE	
4 - Demonstration and Validation			0603627A Smoke, Obscurant and Target Defeating System - Advanced Development	DE79
A. Project Cost Breakdown			FY 1997	FY 1998
Primary Hardware Development			385	
Development Spt Equipment Acquisition			85	
Systems Engineering			505	
Integrated Logistics Support			115	
Quality Assurance			145	
Reliability, Maintainability and Availability			136	
Configuration Management			175	
Technical Data			260	
Production Qualification Test			1725	
Operational Excursion			1200	
Contractor Engineering Support			150	
Government Engineering Support			367	
Program Management			325	
Total			5573	0
B. Budget Acquisition History and Planning Information:			Not applicable.	

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BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603639A Armament Enhancement Initiative

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	56687	37127	26526	37231	43000	38258	48099	Continuing	Continuing
D643 Project 643	39389	22594	26526	37231	43000	38258	48099	Continuing	Continuing
D656 X-ROD	17298	14533	0	0	0	0	0	0	155474

Mission Description and Budget Item Justification: The Armament Enhancement Initiative (AEI) is a comprehensive program to accelerate fielding of advanced tank ammunition and ensure the continued lethality of the U.S. tank fleet despite rapid worldwide development of armored vehicle protection technology. The AEI program identifies promising technology efforts and uses competitive developments and streamlined acquisition procedures to achieve this goal. Current developments are in the areas of kinetic energy, including associated training ammunition, and smart top attack rounds with an anti-helicopter capability. Future efforts include paced initiatives leading to new developments or upgrades to existing and future weapons platforms. To date, four rounds of tank ammunition have completed development and entered production. All tank ammunition development funds are combined into one program element PE to facilitate transition between phases, avoid administrative delays, and allow realignment of funds from less to more promising areas. Budget Activity 4, Demonstration and Validation, is the most appropriate budget activity for the projects within this PE.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603639A Armament Enhancement Initiative								D643	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D643	Project 643	39389	22594	26526	37231	43000	38258	48099	Continuing	Continuing	

A. Mission Description and Justification: Kinetic energy cartridges provide the primary anti-tank capability for the armor force. Providing lethal 120mm munitions is essential in maintaining the overmatch capabilities of the Abrams tank. This point is particularly important since the Army will proceed with limited improvements to the Abrams after the Systems Enhancement Program (SEP), and because the future tank (Future Combat System) is not expected to enter the fleet in quantity until after the 2020 timeframe. Therefore, the 120mm Abrams tank will likely make up the bulk of our tank inventory for at least the next 25 years. The focus of the AEI program is first on the development and production of the M829E3 KE cartridge to defeat the growing advanced KE reactive armor threat. Additionally, production of the M829E3 is critical in maintaining the health of the Depleted Uranium (DU) industrial base. The Army was developing a Smart Target Activated Fire and Forget (STAFF) top attack smart munition. However, for cost reasons the STAFF program is being terminated in FY 98.

Acquisition Strategy: M829E3 & STAFF These projects have used a streamlined acquisition strategy since inception. Schedule and fielding have been paramount while keeping costs low. Integrated Product Teams (IPTs) are being used for both the STAFF and M829E3 programs. A development system contractor, Alliant Techsystems, was selected from a limited number of munitions production base contractors to develop STAFF. The M829E3 will follow the same procedure once the program matures to that point. STAFF will terminate after 2QFY98.

FY 1997 Accomplishments:

KE	7409	Manufactured high energy propulsion system for velocity improvements
	2150	Performed producibility engineering and design optimization of projectile
	9430	Prototype manufacturing and ballistic testing accomplished
	3200	Continued optimization of penetrator
STAFF	8300	Built and tested final subsystem hardware
	6700	Built tactical demonstration hardware
	2200	Tested tactical demonstration hardware
	Total	39389

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PROJECT

4 - Demonstration and Validation

0603639A Armament Enhancement Initiative

D643

FY 1998 Planned Program:

KE

- 3846 Initiate optimization propellant for velocity and vulnerability response
- 3000 Finalize penetrator selection
- 250 Initiate concept studies for trainer
- 500 Downselect to a system contractor and award multiphase contract
- 10952 Cartridge integration and projectile optimization

STAFF

- 3500 Program termination (tailored critical design review (CDR)) for close-out
- 546 Small Business Innovative Research/Small Business Technology Transfer Program
- Total 22594

FY 1999 Planned Program:

KE

- 7564 Finalize propellant optimization
- 18212 Optimization of cartridge configuration
- 500 Conduct counter measure studies
- 250 Finalize concept studies for trainer
- Total 26526

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY1999 President's Budget

FY 1997	FY 1998	FY 1999
45467	40313	18982
46561	23313	
-7172	-719	
39389	22594	26526

Change Summary Explanation: Funding: FY 1997-Undistributed congressional reductions/rescissions (-1078); funds reprogrammed to higher priority requirements (-5000)

FY 1999 increase due to acceleration of M829E3 development (+7544).

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BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
4 - Demonstration and Validation		0603639A Armament Enhancement Initiative						February 1998	D643
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl
									Total Cost
C. Other Program Funding Summary									
Procurement Ammunition, Army 120MM Tank									
E73300		54502	60635	60386	49921	49146	48793	47843	Cont
E73400		115406	116676	129914	126383	94006	115847	103444	Cont
E78001		103488	71286	9732	5326	19090	39945	70174	Cont
E78007		30943	7821	0	0	0	0	0	523175
Total		304339	256418	200032	181630	162242	204585	221461	Cont
D. Schedule Profile									
	1	FY 1997			FY 1998			FY 1999	
		2	3	4	1	2	3	4	
KE									
Manufacture propellant									
Produceability engineering and design									
optimization of projectile									
Prototype mfg. & testing									
Optimize Propellant for									
Velocity/Vulnerability Response									
Downselect to one system contractor									
Cartridge integration and optimize Proj.									
Optimize cartridge configuration									
Finalize propellant configuration									
STAFF									
Build of qualification test hardware									
Build system performance test hardware									
Sensor activated ballistic roll control									
and sensor algorithm captive flight test									
verification									
Build and Test final subsystem hardware									
Build tactical demonstration hardware									
Test Initial Tactical hardware									
Completed test demonstration									
Program close out									
*Denotes completed effort									
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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603639A Armament Enhancement Initiative

D643

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999	
Engineering and Contractor Support	19780	6500	15270	
Program Management Support	16666	6629	3750	
SBIR/STTR		546		
Test and Evaluation Support	1714	7919	7256	
Miscellaneous	1229	1000	250	
Total	39389	22594	26526	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Alliant & Primex	CPFF	Dec 96			0	6370	6500	15270	CONT	28140
Alliant & Primex	CPFF	Sep 90			21602	13410	0	0	CONT	35012
Support and Management Organizations										
PM TMAS	Multiple	Multiple			3445	2375	5189	1000	CONT	12009
ARDEC	MIPR	Multiple			10092	5055	1120	2000		18267
Miscellaneous	MIPR	Multiple			11072	9236	320	750		21378
SBIR/STTR							546			546
Test and Evaluation Organizations										
YPG, APG					4033	1714	7919	7256	CONT	20922
Miscellaneous						1229	1000	250	CONT	2479

Government Furnished Property: Not Applicable

Subtotal Product Development	21602	19780	6500	15270	63152
Subtotal Support and Management	24609	16666	7175	3750	52200
Subtotal Test and Evaluation	4033	2943	8919	7506	23401
Total Project	50244	39389	22594	26526	138753

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BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
4 - Demonstration and Validation		0603639A Armament Enhancement Initiative		D656					
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D656 X-ROD	17298	14533	0	0	0	0	0	0	155474

A. Mission Description and Budget Item Justification : The X-Rod, now known as the Tank Extended Range Munition - KE (TERM-KE) is a 120mm tank ammunition development effort which will use a standard kinetic energy penetrator boosted by a rocket motor and millimeter wave radar fire-and-forget guidance. The TERM-KE will provide greater hit probability at extended ranges, increasing overall kill probability and battle space.

Acquisition Strategy: This program uses a streamlined acquisition strategy. The program is in the Proof of Principle phase. A unique system contracting strategy to prove out innovative component technologies was instituted at inception of the program. A modified Integrated Product Team is being used to leverage the expertise of both the Army and the contractor, Alliant Techsystems (formerly Hercules). In FY 96 the Army terminated the TERM-KE program for affordability reasons. Termination was to take place in FY 97. However, the program continued through congressional plus-up received in FY 97 legislation. This last year was used to package the results of testing for a possible future Tank Extended Range Munition (TERM) advanced technology demonstration.

FY 1997 Accomplishments:

- 4025 Interior ballistics exit criteria
- 3412 Met Guide-to Hit exit criteria
- 6311 Demonstrated in-flight discard exit criteria
- 3550 System analysis and concept baseline for TERM performed
- Total 17298

FY 1998 Planned Program:

- 1050 Interior ballistics exit criteria
- 4800 Lethality demonstrations
- 3900 Unguided All Up Round (UAUR) exit criteria
- 4418 System analysis and system design baseline for TERM
- 365 Small Business Innovative Research/Small Business Technology Transfer Program
- Total 14533

FY 1999 Planned Program: Project not funded in FY 1999

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PE NUMBER AND TITLE

0603639A Armament Enhancement Initiative

PROJECT
D656

4 - Demonstration and Validation

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
17773	0	0
18160	15000	
-862	-467	
17298	14533	0

C. Other Program Funding Summary: Not applicableD. Schedule Profile

	FY 1997			FY 1998			FY 1999				
	1	2	3	1	2	3	4	1	2	3	4
Guide-to-hit exit criteria met											
Interior ballistics exit criteria met											
System Requirements Review											
In-flight discard exit criteria met				X*							
Lethality demonstrations				X*							
System Design Review								X			
Preliminary Design Review											X

*Denotes completed effort

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603639A Armament Enhancement Initiative

PROJECT

D656

<u>A. Project Cost Breakdown</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Engineering and Contractor Support	16636	11983	0
Miscellaneous	662	2185	0
SBIR/STTR		365	
Total	17298	14533	

B. Budget Acquisition History and Planning Information

Performing Organizations										
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Alliant Tech Sys.	SS-CPFF	SEP 87	123283	122253	99653	12600	10000	0	0	122253
ARDEC	MIPR	N/A	25044	25044	18758	4036	1983	0	0	24777
Misc.	MIPR	N/A	7812	7812	5232	662	2185	0	0	8079
SBIR/STTR							365			365

Government Furnished Property: Not applicable

Subtotal Product Development	123643	17298	14533	155474
Subtotal Support and Management				
Subtotal Test and Evaluation				
Total Project	123643	17298	14533	155474

Project D656

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																			
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																				
4 - Demonstration and Validation		0603640A Artillery Propellant Development								DB91																				
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
DB91	Artillery Propellant Development	8103	8258	0	0	0	0	0	0	115847																				
<p>A. Mission Description and Budget Item Justification: This program element focuses on the development of the Modular Artillery Charge System (MACS), intended for use with fielded 155mm field artillery systems equipped with M199 and M284 39 caliber cannons and the XM297 cannon under development for use on Crusader. The MACS includes two different types of charge increments - the XM231 designed to achieve ranges in zones 1 and 2, and the XM232 designed to achieve ranges in zones 3-6. Each increment contains propellant, an ignition system, and performance enhancing additives that are loaded in a combustible case. Funding for this effort transitions to PE 0603854A, Project D505 in FY 1999. This program element focuses on the technology demonstration and validation of the MACS and is correctly placed in Budget Activity 4.</p> <p>Acquisition Strategy: Not applicable</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 6637 Continued development of MACS for type classification. 442 Provided project management support and management engineering services. 1024 Initiated preliminary testing for 39 caliber type classification. <p>Total 8103</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 5883 Continue development of MACS for type classification. 368 Project management support and management engineering services. 1800 Conduct safety verification testing for type classification of XM231 MACS for 39 caliber. 207 Small Business Innovative Research/Small Business Technology Transfer Programs <p>Total 8258</p> <p>FY 1999 Planned Program: Funded under PE 0603854A, Artillery Systems Advanced Development, Project D505, Crusader - AD</p> <p>B. Project Change Summary</p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>8322</td> <td>8521</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>8500</td> <td>8521</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>-397</td> <td>-263</td> <td></td> </tr> <tr> <td></td> <td>8103</td> <td>8258</td> <td>0</td> </tr> </table>											FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	8322	8521	0	Adjustments to Appropriated Value	8500	8521		FY 1999 President's Budget	-397	-263			8103	8258	0
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																											
Appropriated Value	8322	8521	0																											
Adjustments to Appropriated Value	8500	8521																												
FY 1999 President's Budget	-397	-263																												
	8103	8258	0																											

Project DB91

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
4 - Demonstration and Validation		0603640A Artillery Propellant Development						February 1998	DB91
C. Other Program Funding Summary		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp
Procurement, Ammo, Army, ER 8021					27911	38892	61763	64215	Cont
RDTE, BA4, Army, PE 0603854, D505		229561	312019	310881	305967	125129		0	1283557
RDTE, BA5, Army, PE 0604854, D503					50000	327021	429225	260928	Cont
Procurement, WCTV, Army, G83500							42341	97356	Cont
Procurement, WCTV, Army, G83600							33548	81763	Cont
D. Schedule Profile		FY 1997			FY 1998		FY 1999		
1		2	3	4	1	2	3	4	
Acquisition Milestones									
Milestone III IPR (MACS - XM231)						4	1		
Engineering Milestones									X
Conducted Initial Production Readiness Review XM231/XM232		X*							
Initiated Safety Verification/Human Factors Testing XM231			X*						
Conducted Critical Design Review XM231			X*						
Complete Safety Verification/Human Factors Testing XM231				X					
Production Readiness Review XM231									X
* Milestone completed									

Project DB91

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603640A Artillery Propellant Development

DB91

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	6637	5883	0
Support and Management	442	368	0
Test and Evaluation	1024	1800	0
SBIR/STTR		207	
Total	8103	8258	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Contractor or Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
ARMTEC Defense Products, Coachella, CA	SS/CPIF	Aug 92	5513	5513	5513				0	5513
ARMTEC Defense Products, Coachella, CA	FF	Oct 96	2170	2170		2170	150		0	2320
Olin Corp. St. Petersburg, FL	FF	Jul 94	640	640	640				0	640
Primex Corp. Marion, IL (Load Assembly & Pk)	FF	Sep 94	2816	2816	1584	1082			0	2666
DSTI, Greenbelt, MD	FF	May 94	2223	2223	2223				0	2223
Hi Shear, Torrence, CA	FF	Mar 95	147	147	147				0	147
Other contracts (\$100K or less)					1359	488	874		0	2721

Project DB91

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY										DB91		
4 - Demonstration and Validation										0603640A Artillery Propellant Development		
PE NUMBER AND TITLE										DB91		
Contractor or	Contract	Method/Type	Award or	Performing	Project	Total	FY 1997	FY 1998	FY 1999	Budget to	Total	
Government	or Funding	Vehicle	Obligation	Activity	Office	Prior to				Complete	Program	
Activity			Date	EAC	EAC							
ARDEC, Picatinny	PO					69746	2132	3771		0	75649	
Arsenal, NJ,												
Rock Island, IL,												
Watervliet												
Arsenal, NY	FFP					4047	175	100		0	4322	
Radford Army												
Ammunition												
Plant, VA,												
Hercules Inc.												
Army Research	PO					4035	590	718		0	5343	
Laboratory,												
Adelphi, MD												
Wright-Patterson	PO					151		270		0	421	
AFB, Dayton, OH												
Various activities						1089				0	1089	
(\$100K or less)												
Support and Management Organizations												
ARDEC, Picatinny	PO					3558	442	368		0	4368	
Arsenal, NJ,												
Various activities												
SBIR/STTR								207			207	
Test and Evaluation Organizations												
TECOM, Yuma, AZ	PO					4397	805	1400		0	6602	
ARDEC, Picatinny	PO					997	219	400		0	1616	
Arsenal, NJ												
Government Furnished Property: None												
Subtotal Product Development						90534	6637	5883			103054	
Subtotal Support and Management						3558	442	575			4575	
Subtotal Test and Evaluation						5394	1024	1800			8218	
Total Project						99486	8103	8258			115847	
Project DB91										Exhibit R-3 (PE 0603640A)		

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603645A Armored Systems Modernization -
Advanced Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	1612	1945	0	5274	31439	39507	49639	Continuing	Continuing
DQ19 Future Combat System	1612	0	0	2004	24843	28877	38457	Continuing	Continuing
D018 Future Scout Vehicle (FSV) - Advanced Development	0	1945	0	0	0	0	0	0	1945
DQ21 DQ21	0	0	0	3270	6596	10630	11182	Continuing	Continuing

Mission Description and Budget Item Justification: Project DQ19, Future Combat System, invests in high pay-off advanced technologies for the next tank beyond the M1A2. Several candidate technologies are being currently evaluated in the science and technology base. Project D018, Future Scout Vehicle, funds the development and demonstration phase of the Future Scout Vehicle (FSV), now known as the Future Scout and Cavalry System (FSCS). The FSCS will replace the current ground scout systems in the battalion/brigade and division/regiment levels. This project will fund finalization of requirements definition, design definition, sensor maturation, and software integration efforts. All projects in this program element fund the advanced development phase of Army combat systems and are therefore correctly placed in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
4 - Demonstration and Validation		0603645A Armored Systems Modernization - Advanced Development								DQ19																					
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																					
COST (In Thousands)																															
DQ19 Future Combat System		1612	0	0	2004	24843	28877	38457	Continuing	Continuing																					
<p>A. Mission Description and Justification: The Future Combat System (FCS) will be the Army's replacement for the Abrams Main Battle Tank. The M1A2 System Enhancement Program (SEP) tank (see Project D330) is expected to continue in service until 2015 or later. The FCS will feature leap ahead capabilities in mobility, survivability, lethality, and sustainability. In FY 97 Congress provided a plus-up to initiate Future Combat System studies and investigate improvements to the M1A1 and M1A2 tanks. The main effort before FY 00 is now being conducted in early S&T (PEs 0601104A, 0602618A, 0602601A, 0602624A). Ongoing S&T programs are developing and maturing competing main armament concepts, such as electromagnetic, electrothermal-chemical, and conventional technologies. The size, power and weight differences of any of these concepts is the major system design driver for FCS.</p> <p>Acquisition Strategy: At this stage, the focus is on maturing candidate technologies in the tech base, prior to enter system development. The acquisition strategy will stress competition in development and production.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 1612 Initiated Future Combat System concept studies <p>Total 1612</p> <p>FY 1998 Planned Program: Program not funded in FY 98</p> <p>FY 1999 Planned Program: Program not funded in FY 99</p> <p>B. Project Change Summary</p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>7803</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>8000</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>-6388</td> <td></td> <td></td> </tr> <tr> <td></td> <td>1612</td> <td>0</td> <td>0</td> </tr> </table> <p>Change Summary Explanation: FY 97 decrease (-6000) due to Congressional rescission in FY 98 appropriation; -197 for undistributed Congressional reductions.</p>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	7803	0	0	Adjustments to Appropriated Value	8000			FY 1999 President's Budget	-6388				1612	0	0
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																												
Appropriated Value	7803	0	0																												
Adjustments to Appropriated Value	8000																														
FY 1999 President's Budget	-6388																														
	1612	0	0																												

Project DQ19

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603645A Armored Systems Modernization - Advanced Development								DQ19	
<u>C. Other Program Funding Summary</u>		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To</u>	<u>Total</u>	
Abrams IOTE (D2UT)		97	0	0	0	0	0	0	Compl	Cost	
Abrams Improvement Program (D330)		69187	38559	6421	2982	3973	9923	34805	0	97	
									Con't	Con't	
<u>D. Schedule Profile:</u> Not applicable											
<div>Project DQ19</div> <div>Page 3 of 7 Pages</div> <div>Exhibit R-2 (PE 0603645A)</div>											

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
4 - Demonstration and Validation		0603645A Armored Systems Modernization - Advanced Development				DQ19
A. Project Cost Breakdown		FY 1997	FY 1998	FY 1999		
FCS Concept Analyses		1612				
Total		1612	0	0		
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or Contract	Method/Type	Award or Obligation Date	Performing Activity	EAC	Project Office EAC	Total Prior to FY 1997
Product Development Organizations						
Booz Allen &Ham	C-CPFF	Aug 97				FY 1997
McLean, VA						FY 1998
Other Contracts		Aug 97				FY 1999
Support and Management Organizations						
Other Gov Agency	MIPR					Budget to Complete
Test and Evaluation Organizations: Not applicable						
Government Furnished Property Not Applicable						
Subtotal Product Development			799			799
Subtotal Support and Management			813			813
Subtotal Test and Evaluation						
Total Project			1612			1612
Project DQ19		Page 4 of 7 Pages				Exhibit R-3 (PE 0603645A)

Project DQ19

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
D018

4 - Demonstration and Validation

0603645A Armored Systems Modernization -
Advanced Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D018 Future Scout Vehicle (FSV) - Advanced Development	0	1945	0	0	0	0	0	0	1945

A. Mission Description and Justification: The Future Scout Vehicle (FSV), now known as the Future Scout and Cavalry System (FSCS), is the Army's next generation ground reconnaissance and intelligence gathering, combat vehicle system. FSCS will provide Army reconnaissance elements a platform with significant improvements in vehicle mobility, survivability, lethality, target acquisition and communication capabilities through integration of advanced technologies. Advanced sensors and communication systems, combined with sophisticated vehicle signature management, will significantly enhance the scout's capability to rapidly detect, identify, recognize, and hand-off multiple targets to field commanders under all conditions and in all environments.

Acquisition Strategy: Plans call for the competitive award of contracts to two US/UK consortia who will be given responsibility for development of an FSCS design concept and fabrication of a demonstration vehicle. Extensive modeling and simulation will be used to meet, verify, validate and finalize system requirements, and establish a design definition baseline. The baseline will support follow-on Engineering and Manufacturing Development (EMD). During the building of the Program Objective Memorandum, this project was restructured, transferring funds to support the FSCS Advanced Technology Demonstration (PE 0603005A) and to fund FSCS EMD (PE 0604645A).

FY 1997 Accomplishments: Project not funded in FY 97

FY 1998 Planned Program:

- 1896 Initiate Project Management (PM); Integrated Product Team Studies
- 49 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 1945

FY 1998 Planned Program: Project not funded in FY 99

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
0	2007	2008
	2007	0
	-62	
0	1945	0

Change Summary: FY99 reduction (-2008) due to program transition

Project D018

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BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	February 1998
4 - Demonstration and Validation		0603645A Armored Systems Modernization - Advanced Development							PROJECT D018
C. Other Program Funding Summary		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Total Cost
PE 604645A, D022 - Future Scout Vehicle						4000	54820	109622	Continuing
PE 603005A, D440 - Advanced Combat Vehicle Technology			2800	24452	54642	68457	6800	0	Continuing 157151
PE 603005A, D497 - Combat Vehicle Electronics				4795	0	0	0	0	4795
D. Schedule Profile None									

Project D018

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DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603645A Armored Systems Modernization -

D018

Advanced Development

A. Project Cost Breakdown

Project Management

SBIR/STTR

Total

FY 1997

FY 1998

FY 1999

1896

0

49

1945

0

0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Method/Type

Award or

Obligation

Date

Vehicle

Performing

Activity

EAC

EAC

Total

Prior to

FY 1997

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

1896

49

1896

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1896

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1896

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Project D018

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603649A Engineering Modification Equipment -

DG24

Advanced Development

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG24 M1 Breacher	498	0	0	0	0	0	0	0	72956

A. Mission Description and Budget Item Justification: The Grizzly (M1 Breacher) will provide the Combat Engineer with significantly improved mission effectiveness and crew/vehicle survivability while clearing minefields and removing complex natural and man-made obstacles at the forward edge of the battlefield. The Grizzly will be capable of moving with, and be as survivable as, the force it is supporting. The system provides a critical resource for executing in stride breaches, supporting the Force XXI maneuver commander's goals of information and maneuver dominance on the battlefield. The Grizzly, a single, survivable breach platform, gives the Combat Engineer a capability that does not currently exist in today's complex obstacle breaching operations, and will facilitate successful execution of ground combat mission requirements by maneuver forces. This program element supports Program Definition and Risk Reduction (PDRR) efforts and is appropriately placed in Budget Activity 4.

Acquisition Strategy: Research and development efforts have leveraged the accomplishments of the Combat Mobility Vehicle Advanced Technology Transition Demonstrator (CMV-ATTD) contract. Design modifications were written into the Advanced Development contract for the powertrain and other chassis components/systems necessary to insure that the Grizzly meets the mission profile required by the Operational Requirements Document. In FY 1997 the project transitioned to PE 0604649A, DG25, for the Engineering and Manufacturing Development (EMD) phase.

FY 1997 Accomplishments:

- 498 Refined and Applied Engineering Changes
- Total 498

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary

FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	0	0	0
Adjustments to Appropriated Value	0		
FY 1999 President's Budget	498	0	0
	498		

Change Summary Explanation: FY 1997 funding increase was required to extend the Program Definition and Risk Reduction (PDRR) phase. Milestone II was accomplished in December 1996 and approval was received to enter the EMD phase.

Project DG24

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PE NUMBER AND TITLE

0603649A Engineering Modification Equipment - Advanced Development

DG24

To Compl	Total Cost
100	100
200	200
300	300
400	400
500	500
600	600
700	700
800	800
900	900
1000	1000

<u>To</u>	<u>Total</u>
0	244752
Cont'd	Cont'd
Cont'd	Cont'd
0	16864

FY 1999

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DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603649A Engineering Modification Equipment -
Advanced Development

DG24

A. Project Cost Breakdown

Development Engineering	FY 1997	FY 1998	FY 1999
Logistics Support	498	0	0
System Test & Evaluation	0	0	0
System Management	0	0	0
Total	498	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
United Defense, York, PA	SS-CPIF	Sep 92	61052	61052	60554	498				61052
Other Contracts	Various	(K Mod)			811					811
Support and Management Organizations					6389					6389
TACOM					250					250
Warren, MI					1456					1456
ANAD					230					230
Anniston, AL										
Other Gov't Agencies										
Contract Support to Milestone Rev										
Test and Evaluation Organizations										
TECOM					1636					1636
APG, MD										

Project DG24

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
4 - Demonstration and Validation		0603649A Engineering Modification Equipment - Advanced Development			DG24	
Government Furnished Property:						
Contract						
Item	Method/Type or Funding	Award or Obligation	Delivery	Total	Budget to	Total
Description	Vehicle	Date	Date	FY 1997	FY 1998	Program
Product Development Property						
TACOM Warren, MI	Requisitions	Various	Various	159		159
Support and Management Property None						
Test and Evaluation Property						
TACOM Warren, MI	Requisitions	Various	Various	973		973
Subtotal Product Development						
Subtotal Support and Management				61524	498	62022
Subtotal Test and Evaluation				8325		8325
Total Project				2609		2609
				72458	498	72956

Project DG24

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Project DG24

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603653A Advanced Tank Armament System

DB99

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB99 Advanced Tank Armament System	11144	8704	8928	0	0	0	19950	0	62834

A. Mission Description and Budget Item Justification: The goal of the Advanced Tank Armament System (ATAS) program is to sustain overmatch superiority over increasingly more capable future enemy tanks. The ATAS program is one of the principal programs supporting tank lethality improvements. The program is developing and demonstrating a number of key gun and fire control technologies which offer significant payoffs in lethality for the current tank fleet, the next upgrade to the M1A2 Abrams tank as well as other future weapon system platforms. However, due to funding reductions and ongoing cost reduction initiatives, the program has been restructured to meet mission needs through CAIV (Cost As an Independent Variable).

The ATAS Program has two main phases. Phase I develops and demonstrates in FY 98, autotarget tracking technology that is applicable to the current M1 Abrams series of tanks. Phase I is a requirements oriented, Combat Developer (user) directed program that increases tank lethality by allowing the tank crew to quickly kill enemy battlefield targets. Phase I technology, when applied to tank training devices, will also reduce tank crew training costs by reducing the amount of training necessary for new gunners to perform proficiently. Phase II demonstrates a highly lethal long 120mm tank main gun that can kill advanced enemy tanks at long range. Phase II also develops advanced fire control system components that give the user the ability to consistently and accurately hit these long range targets. In FY 97, due to a congressional plus-up, the program began the design of the compact autoloader for a possible test demonstration in FY 99 in an M1A2. Maturation of the long 120mm gun and fire control components will continue through FY 98. Gun maturation includes the first application of wear resistant barrel coatings to a 120mm gun tube to reduce gun barrel erosion. Also, the development of a barrel vibration absorber as well as an improved MRS (Muzzle Reference System), thermal shroud and bore evacuator will be pursued. Advanced fire control components including Digital Adaptive Stabilization, modular reusable software and system simulators will also be developed to increase fire-on-the move accuracy. These items will be completed, tested and integrated into an M1A2 test tank in FY99 for a technology demonstration. ATAS technology may also be applied to Future Weapon Systems platforms such as the Future Scout and Cavalry Vehicle and Future Combat System (FCS) in both large and medium calibers to reduce the overall cost of Army weapon system development. Long 120mm gun Engineering Manufacturing Development (EMD), which was to begin in FY 00 to prepare the cannon for possible integration into the Abrams tank, has been eliminated due to funding constraints.

The ATAS program is conducting prototyping, testing and early operational assessment of critical tank armament systems, subsystems, and components; identifying cost drivers and alternatives using modeling and simulation, and working with the user representative to establish performance objectives and identify cost-schedule-performance trade-offs. ATAS is also demonstrating component performance enhancements for application to future Abrams upgrades, and is appropriately placed in Budget Activity 4.

Acquisition Strategy: The technologies in ATAS will be demonstrated then transferred to PM Abrams for further technical development. Technologies in ATAS may flow into the next major upgrade or Engineering Change Proposal (ECP) to the current Abrams tank. Several contractors and government agencies are used to develop or integrate existing technologies.

Project DB99

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		
4 - Demonstration and Validation		0603653A Advanced Tank Armament System		
DB99				
FY 1997 Accomplishments:				
•	1600	Gun Technology - continued gun maturation program including redesign of the gun mount for low cost M1A2 installation		
•	600	Phase I - continued autotarget tracker demonstration preparation		
•	6944	Phase II - completed fire control component hardware/software integration, continued turret integration study		
•	2000	Initiated ruggedization of the Compact Autoloader design		
Total	11144			
FY 1998 Planned Program:				
•	200	Phase I - complete vehicle testing		
•	82	Phase II - complete coating development		
•	2257	Phase II - fabricate long gun prototype hardware & subsystem testing		
•	3000	Phase II - begin design & fabrication of the stabilization/Fire Control System		
•	3000	Phase II - begin turret modification design		
•	165	Small Business Innovative Research/Small Business Technology Transfer Program		
Total	8704			
FY 1999 Planned Program:				
•	2000	Phase II - complete long gun hardware fabrication & testing		
•	2000	Phase II - complete stabilization/fire control system fabrication & test		
•	3500	Phase II - complete turret integration		
•	1428	Phase II - demonstration & test		
Total	8928			
B. Project Change Summary				
FY 1998/1999 President's Budget		FY 1997	FY 1998	FY 1999
Appropriated Value		11395	8982	8928
Adjustments to Appropriated Value		11639	8982	
FY 1999 President's Budget		-495	-278	
		11144	8704	8928
C. Other Program Funding Summary: Not applicable				

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603653A Advanced Tank Armament System

PROJECT

DB99

D. Schedule Profile

1

**Complete Phase II fire control hardware/
software integration**

software integration

Award Compact Autoloader Contract

Complete Gun Tube Coating Effort

Complete Autotracker Demonstration

Begin 120mm Long Gun hardware fab

Begin design/fabricate Stabilization/Fire

Control

Begin turret modification design

Complete Ruggedized Autoloader Design

Complete gun/stabilization/fire control

system fabrication

Complete turret integration

Vehicle Demonstration - 120mm Long

Gun with advanced Stabilization/ Fire

Control

***Milestone Completed**

FY 1997

1

***X**

 \mathbf{X}^*

X

X

X

X

X

X

X

Project DB99

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
DB99

4 - Demonstration and Validation

0603653A Advanced Tank Armament System

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development/Contractor	7958	5335	5300
Primary Hardware Development/Government	2186	2204	1800
Quality Assurance/ARDEC	500	350	350
Developmental Test & Evaluation	100	200	1028
Program Management (PM-TMAS)	400	450	450
SBIR/STTR		165	
Total	11144	8704	8928

B. Budget Acquisition History and Planning Information

Performing Organizations

Contract

Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--------------------------	--------------------------------	--------------------------	---------------------	--------------------	------------------------	---------	---------	---------	--------------------	---------------

Product Development Organizations

Texas Instruments	C-CPFF	Sep 90		20575	9668	4158	2700	1800	18326	
Benet Laboratories	OGA				2400	1886	2204	1800	12550	20840
Hughes Aircraft	SS-CPFF	Jan 93		240	140	100				240
GDLS						2000	2800	3500		8300
Western Design						1700				1700
Howden										
ARDEC	OGA				200	300				500
Support and Management										
PM-TMAS/ARDEC					1000	900	635	800	2400	5735
SBIR/STTR							165			165
Test and Evaluation										
CSTA					700	100	200	1028	5000	7028

Government Furnished Property: Not Applicable

Project DB99

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE			0603653A Advanced Tank Armament System		DB99
4 - Demonstration and Validation							
		Total					
		Prior to					
		FY 1997	FY 1997	FY 1998	FY 1999	Budget to	Total
		14108	11144	8704	8928	Complete	Program
						19950	62834
Subtotal Product Development							
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project		14108	11144	8704	8928	19950	62834

Project DB99

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BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603713A Army Data Distribution System

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	22699	20526	17281	4638	13156	3311	3259	Continuing	Continuing
D370 PUH-PLRS/JTIDS Hybrid*	19255	20526	10981	4638	13156	3311	3259	Continuing	Continuing
D385 JTIDS (LINK 16)	0	0	6300	0	0	0	0	0	6300
D2QT EPLRS/JTIDS Operational Test	3444	0	0	0	0	0	0	0	4105

* FY97 R-1 exhibit contains an administrative error. Funding shown here is correct

Mission Description and Budget Item Justification: The Army Data Distribution System (ADDS), which consists of the Enhanced Position Location Reporting System (EPLRS), the Joint Tactical Information Distribution System (JTIDS), Multifunctional Information Distribution System (MIDS) and the Near Term Digital Radio (NTDR) provides support to the Army's air defense, fire support, maneuver control, intelligence and combat service support automated system. Project D370 is capable of "digitizing data messages" that must be transmitted on the battlefield. It is capable of providing multi-functions; data communications, unit locations and unit identification. The ADDS network automatically utilizes manpack, surface vehicle and airborne vehicle user units to achieve range extension. It has been designated specifically to meet the data communications requirements of emerging tactical automated data processing and sensor based systems. The ADDS will provide reliable, real-time, secure, jam-resistant data communications and position location capabilities to the soldier and his unit commander. These projects focus on efforts associated with advanced technology development used to demonstrate general military utility to include demonstration and validation in the area of Army Data Distribution and are correctly placed in Budget Activity 4.

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BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603713A Army Data Distribution System

PROJECT
D370

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	D370 PJH-PLRS/JTIDS Hybrid*	19255	20526	10981	4638	13156	3311	3259	Continuing

A. Mission Description and Budget Item Justification : The Near-Term Digital Radio (NTDR) is a Research and Development program to finance systems for test and experimentation. It will provide the TOC-to-TOC communication function for the First Digitized Corps. The program's vision is to create the Army Communication data backbone for Platoon to Brigade for Force XXI. It is one of the seven major elements which will provide a seamless digital communication capability throughout the fighting force for the Digital battlefield of the 21st century. To allow the NTDR to evolve and to make maximum use of technology insertion, it is based on an open architecture which allows programmability and future expansion. The project will provide reliable, real time, secure, jam-resistant data communications and position location capabilities to the soldier and to his unit commander. This project provides data distribution support to the Army's air defense, fire support, maneuver control, intelligence and combat service support automated systems, and is capable of "digitizing data messages" that must be transmitted on the battlefield. The Joint Tactical Information Distribution Systems (JTIDS)/LINK-16 portion of ADDS program is a joint program representing all services and allied force requirements with the purpose of acquiring a digital information system for tactical interoperability and awareness which complies with the ASD/C3I policy establishing LINK-16 as the DoD Defense Control Centers, and to control air and missile defense weapon engagement operations.

Acquisition Strategy: The NTDR program maximizes the use of Non-Development Item (NDI) and Commercial Off-The-Shelf (COTS) hardware and software. An RDTE contract was awarded competitively in January 1996. In FY97/98, the NTDR units will be utilized for testing and experiments both at Electronic Proving Ground (EPG) and in Division XXI which will focus on enhancing the command and control aspects of maneuver warfare. The Multifunctional Information Distribution System (MIDS) program is a Navy managed joint services development program currently viewed as an eventual low cost replacement for parts of the JTIDS family of high speed data terminals. Remaining effort in FY97 for the EPLRS program is for required Network Control Station - EPLRS (Downsized)(NCS-E(D)) documentation.

FY 1997 Accomplishments:

- 15573 Continued NTDR Program
- 1483 Program Management Activities for NTDR
- 478 MIDS Contract Development/Engineering Support
- 1100 NTDR Testing
- 621 Documentation for EPLRS Net Control Station Downsized (NCS-E(D))
- Total 19255

Project D370

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BUDGET ACTIVITY												PE NUMBER AND TITLE			PROJECT									
4 - Demonstration and Validation												0603713A Army Data Distribution System			D370									
D. Schedule Profile												FY 1997			FY 1998			FY 1999						
												1	2	3	4	1	2	3	4	1	2	3	4	
Class 2M FRP Delivery																								
Start Fielding LRIP Terminals																								
MIDS Development Test																	X							
MIDS OT/Multiservice Test																	X							
MIDS Transition Decision																					X			
MIDS Contract Award																							X	
NTDR Option Award																								X
NTDR EPG Field Test																	X							
NTDR Tactical Internet Test																			X					
NTDR OT																								X
*Event has been completed																								

Project D370

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
D370

4 - Demonstration and Validation

0603713A Army Data Distribution System

	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown			
Contractor Engineering Support	16672	15762	5341
Program Management Support	1483	1347	1565
Miscellaneous (NTDR-GFE)	0	303	310
Testing	1100	2632	3765
SBIR/STTR		482	
Total	19255	20526	10981

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Contract	Method/Type	Award or	Performing	Project	Total
Activity	Vehicle	Obligation	Activity	Office	Prior to
		Date	EAC	EAC	FY 1997

Product Development Organizations

	FY 1997	FY 1998	FY 1999	Budget to	Total
				Complete	Program

Science	MIPR	AUG 96	151	0	0	151
Application Int'l						
MIDSCO	MIPR	SEP 97	0	135	2511	2646
Venntronix Corp,	MIPR	APR 96	420	0	0	420
Eatontown, NJ						
Lockheed/Martin	MIPR	DEC 96	1380	621	0	2001
ITT, Ft. Wayne	C/CPFF/FFP	JAN 96	2352	15573	13251	2001
VISICOM	SS/CPFF	JUN 96	35	0	0	35

Support and Management Organizations						
Misc	MIPR	DEC 95	125	0	0	125
Misc (NTDR)	MIPR	FEB 98	8286	1319	1550	125
C3I (NTDR)	MIPR	JUN 96	838	164	0	164
MITRE	MIPR	NOV 96	180	180	0	180
Misc (MIDS)	MIPR	NOV 96	163	163	0	163
TRACOR	PWD	MAR 98			102	163
SBIR/STTR					482	482

Test and Evaluation Organizations						
EPG	MIPR	MAY 96	7629	1100	2632	3765
EPG	MIPR	FEB 96	423	0	0	0

Project D370						

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		0603713A Army Data Distribution System		
4 - Demonstration and Validation		D370				
Government Furnished Property: N/A						
		Total				
		Prior to			Budget to	Total
		FY 1997	FY 1997	FY 1998	FY 1999	Program
		4338	16329	15762	5341	Cont
		729	1826	2132	1875	Cont
		507	1100	2632	3765	Cont
		5574	19255	20526	10981	Cont

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT	
4 - Demonstration and Validation		0603713A Army Data Distribution System						February 1998	D385	
	COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D385	JTIDS (LINK 16)	0	0	6300	0	0	0	0	0	6300

A. Mission Description and Budget Item Justification: The Joint Tactical Information Distribution (JTIDS)/LINK-16 portion of the ADDS program provides a joint and allied interoperable LINK-16 tactical digital data and voice common link among air, ground surface and subsurface platforms. LINK-16 is the DoD directed standard for tactical communications of all processed data and is DoD's primary tactical data link for C2I. Link-16 supports the Army's Theater Air and Missile Defense Engagement Operations. The Army intends to migrate to the Multifunctional Information Distribution System (MIDS) through investment in an Army variant of that multi-national terminal. This project is not a new start, but rather a continuation of an effort begun under 0603713A, project D370.

Acquisition Strategy: The Multifunctional Information Distribution System (MIDS) program is a Navy managed joint services development program currently viewed as an eventual low cost replacement for parts of the Joint Tactical Information Distribution System (JTIDS) family of high speed data terminals.

FY 1997 Accomplishments: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

- 504 Program Activities for MIDS
- 3100 MIDS Testing
- 2696 Continue MIDS Program
- Total 6300

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value	0		
Adjustments to Appropriated Value	0		
FY 1999 President's Budget	0	0	6300

Change Summary Explanation: Funding: FY 1999 funds reprogrammed from 0603713A, project D370 to support this effort.

C. Other Program Funding Summary: Not applicable.

Project D385

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BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603713A Army Data Distribution System

PROJECT

D385

D. Schedule Profile

1	FY 1997
2	
3	

FY 1998 3

4

FY 1999	3	X
2		

MIDS DT/OT

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603713A Army Data Distribution System

D385

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Program Management Support	0	0	504
Contractor Engineering Support	0	0	2696
Test and Evaluation	0	0	3100
Total	0	0	6300

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations	TBD	TBD	504	504	0	0	0	504	0	504
Support and Management Organizations	TBD	TBD	2696	2696	0	0	0	2696	0	2696
Test and Evaluation Organizations	TBD	TBD	3100	3100	0	0	0	3100	0	3100

Government Furnished Property: Not applicable

Subtotal Product Development	504	504
Subtotal Support and Management	2696	2696
Subtotal Test and Evaluation	3100	3100
Total Project	6300	6300

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																																															
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																																
4 - Demonstration and Validation		0603713A Army Data Distribution System								D2QT																																																
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																																
D2QT	EPLRS/JTIDS Operational Test	3444	0	0	0	0	0	0	0	4105																																																
<p>A. Mission Description and Budget Item Justification: This project finances the direct costs of planning and conducting operational testing and evaluation of the EPLRS/JTIDS by the Operational Test and Evaluation Command (OPTEC). JTIDS is an Acquisition Category (ACAT) I system with an Initial Operational Test and Evaluation (IOT&E) beginning 1QFY97. Operational Testing is conducted under conditions, as close as possible, to those encountered in actual combat with typical user troops trained to employ the system. OPTEC provides Army leadership with an independent test and evaluation of effectiveness and suitability of the system.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 2890 Conducted JTIDS OT • 337 JTIDS OT Evaluation • 217 OT Unit (Test Players) Support <p>Total 3444</p> <p>FY 1998 Planned Program: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>B. Project Change Summary</p> <table> <tr> <td>FY1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>3538</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>3653</td> <td></td> <td></td> </tr> <tr> <td>FY1999 President's Budget</td> <td>-209</td> <td></td> <td></td> </tr> <tr> <td></td> <td>3444</td> <td>0</td> <td>0</td> </tr> </table> <p>C. Other Program Funding Summary: Not Applicable</p> <p>D. Schedule Profile</p> <table> <tr> <td></td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>X*</td> <td>4</td> <td>1</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>3</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td></td> <td>2</td> </tr> <tr> <td></td> <td></td> <td></td> <td>3</td> </tr> <tr> <td></td> <td></td> <td></td> <td>4</td> </tr> </table> <p>Conduct JTIDS OT</p> <p>*Denotes completed milestone</p>											FY1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	3538	0	0	Adjustments to Appropriated Value	3653			FY1999 President's Budget	-209				3444	0	0		FY 1997	FY 1998	FY 1999	1	2	3	4	X*	4	1	2			3	1				2				3				4
FY1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																																																							
Appropriated Value	3538	0	0																																																							
Adjustments to Appropriated Value	3653																																																									
FY1999 President's Budget	-209																																																									
	3444	0	0																																																							
	FY 1997	FY 1998	FY 1999																																																							
1	2	3	4																																																							
X*	4	1	2																																																							
		3	1																																																							
			2																																																							
			3																																																							
			4																																																							

Project D2QT

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
D2QT

4 - Demonstration and Validation

0603713A Army Data Distribution System

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	3444	0	0
Total	3444	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations : None										
Support and Management Organizations: None										
Test and Evaluation Organizations:										
OPTEC, FT BLISS	MIPR	MAR 96	4105	4105	661	3444	0	0	0	4105

Government Furnished Property: None

Subtotal Product Development	0	0	0	0	0	0	0	0	0	0
Subtotal Support and Management	0	0	0	0	0	0	0	0	0	0
Subtotal Test and Evaluation	661	3444	0	0	661	3444	0	0	0	4105
Total Project	661	3444	0	0	661	3444	0	0	0	4105

Project D2QT

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603745A Tactical Electronic Support Systems -
Advanced Development (TIARA) D535

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D535 Intelligence Fusion Analysis Demonstration	3837	0	0	0	0	0	0	0	20000

A. Mission Description and Budget Item Justification: This program funds application and validation of advanced computer software and hardware technologies to intelligence fusion analysis functions and prototype development, integration and evaluation of improved tactical intelligence fusion capabilities. This project supports the urgent requirement for an automated tactical intelligence processing system through technology insertion into, and development and evaluation of, prototype upgrades to the All Source Analysis System (ASAS), both during development and after fielding and therefore is appropriately placed in Budget Activity 4.

Acquisition Strategy: This project consists of studies, prototype development and evaluation of the integration of tactical intelligence fusion capabilities into existing systems. The efforts are for joint advanced technology research via contractors, Joint Propulsion Laboratory (JPL), a federally funded research and development center (FFRDC), and some funds channeling to colleges and universities as grants under JPL oversight.

FY 1997 Accomplishments:

- 500 Continued to investigate, develop and apply advanced software and hardware processing, storage, display and input/output (I/O) technologies to tech base prototypes of high-performance, expanded intelligence fusion capabilities
 - 2487 Continued to evaluate, configure and integrate tech base prototype capabilities into operational ASAS prototypes and ASAS Block II development
 - 850 Continued to support the development, evaluation and refinement of ASAS operational prototypes and their integration into mainline ASAS development and acquisition per the Joint Prototyping Plan
- Total 3837

FY 1998 Planned Program: Program not funded in FY98

FY 1999 Planned Program: Program not funded in FY99

B. Project Change Summary

FY1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	3941	0	0
Adjustments to Appropriated Value	4025		
FY1999 President's Budget	-188		
	3837	0	0

Project D535

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998		
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
4 - Demonstration and Validation		0603745A Tactical Electronic Support Systems - Advanced Development (TIARA)								D535			
C. Other Program Funding Summary: None													
D. Schedule Profile													
Expanded Tech Base Prototypes		1	2	3	4	1	2	3	4	1	2	3	4
- Interface Adv Sit Assmt with ASAS Block II					X*								
- Integrate Asset Management into ASAS Block II prototypes													
- Incorporate Adv Correlation Techniques into ASAS Oper Prototypes													
- Integrate Exp Tech Base Capabilities into ASAS Operational Prototypes													
- Integrate IBIS into ASAS													
- Integrate Operational Prototype into ASAS Block II													
*Denotes a completed effort													
Project D535		Page 2 of 3 Pages								Exhibit R-2 (PE 0603745A)			

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603745A Tactical Electronic Support Systems -
Advanced Development (TIARA)

D535

A. Project Cost Breakdown
Prototype Development Efforts
Total

FY 1997	FY 1998	FY 1999
3837	0	0
3837	0	0

B. Budget Acquisition History and Planning Information:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity
			EAC

Product Development Organizations

JPL	PWD	10533	FY 1997	FY 1998	FY 1999	Total Prior to FY 1997
EWA	PWD	2940	3837			14370
Misc. Contracts		1624				2940
						1624

Support and Management Organizations: None
Test and Evaluation Organizations: None

Government Furnished Property: None

Subtotal Product Development	15097	3837	0	0	0	18934
Subtotal Support and Management	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	15097	3837	0	0	0	18934

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE
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BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6487	7324	7581	9140	9348	10884	11376	Continuing	Continuing
DC09 Unit/Organizational Equipment	2124	1895	1609	1851	2254	1804	2224	Continuing	Continuing
D610 Food Advanced Development	1849	2193	2582	3131	3395	3819	3853	Continuing	Continuing
D669 Clothing and Equipment	2514	3236	3390	4158	3699	5261	5299	Continuing	Continuing

Mission Description and Budget Item Justification: Provide advanced development for unit/organizational equipment, improved individual clothing and equipment, fabric shelters, food and field service equipment which will enhance soldier battlefield effectiveness, survivability, sustainment and quality of life. Program element supports advanced development of a new generation of field service support items and shelters, including collective protection and shelter heaters for unit/organizational use to enhance the quality of life of field soldiers and the ability to project forces to spartan environments. Program element also supports advanced development of individual clothing and equipment items to lighten the soldier's load and incorporate protection against chemical and biological agents, thermal nuclear flash, ballistic threats, visual and electronic detection and environmental hazards. The projects in this Program Element focus on efforts to demonstrate general military utility, to include demonstration and validation, and are, therefore, correctly placed in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998						
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
4 - Demonstration and Validation		0603747A Soldier Support and Survivability		DC09						
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC09	Unit/Organizational Equipment	2124	1895	1609	1851	2254	1804	2224	Continuing	Continuing
<p>A. Mission Description and Justification: Develop and field soft shelters, showers, latrines, heaters, mortuary affairs, organizational equipment and other combat service support equipment to improve unit sustainability and combat effectiveness.</p> <p>Acquisition Strategy: Accelerated Product developments and testing which transition to Engineering and Manufacturing Development and/or Production.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 733 Awarded Modular General Purpose Tent System (MGPTS) low rate initial production (LRIP) contract with 4 optional production periods. 202 Converted and tested existing Ammunition Solar Shade stock as possible non-materiel alternative to Ammunition Solar Cover requirement. 435 Awarded Lightweight Maintenance Enclosure (LME) LRIP contract with 4 optional production periods. 322 Completed pre-qualification test for the Ballistic Protective System (BPS) 432 Completed development of thermoelectric Space Heater Small (SHS) prototype for improved heat distribution and increased efficiency. Completed development of the Space Heater Arctic (SHA) and the Space Heater Small. Prepared Integrated LRIP/FRP contract. <p>Total 2124</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 100 Conduct shelter/heater habitability study to validate applications for the distribution of the SHA, SHS, and H45. 200 Type Classify BPS and prepare performance specification. Prepare LRIP contract with production options. 347 Conduct market survey of the Family of Field Latrines (FOFL). Fabricate prototypes of the Follow-On-Latrine. Conduct limited Technical Testing and Type Classify the Performance Specification. Procure prototypes of the Maturing Theater Latrine (MTL) and initiate test and evaluation. 600 Procure modified non-developmental item (NDI) prototypes of the Aviation Maintenance Shelter (AMS) and conduct technical testing. 300 Complete Ammunition Solar Cover testing, prepare performance specification and prepare LRIP contract. 300 Complete testing and field evaluation of the LME and prepare for MS III/production decision. 48 Small Business Innovative Research/Small Business Technology Transfer Programs. <p>Total 1895</p>										

Project DC09

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PE NUMBER AND TITLE

0603747A Soldier Support and Survivability

DC09

- 500 Conduct test and evaluation of the FOFL (MTL), complete performance specification and approve production decision.
- 805 Award development contract for prototype air beam technology shelter.

B. Project Change Summary

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
--	----------------	----------------	----------------

<u>1289</u>	<u>1955</u>	<u>1737</u>
-------------	-------------	-------------

1316 1955

+808-09-

C. Other Program Funding Summary

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost Cont
1701	1740	1720	1861	2736	2105	2563		

FY 1997

FY 1997

3

3

3

3

3

3

3

3

3

3

3

3

3

3

	FY 1997			FY 1998			FY 1999					
1	1	2	3	4	1	2	3	4	1	2	3	4

FY 1999 3

4

To	Total
<u>Compl</u>	<u>Cost</u>
Cont	Cont

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BUDGET ACTIVITY					DATE				
4 - Demonstration and Validation					February 1998				
PE NUMBER AND TITLE					PROJECT				
0603747A Soldier Support and Survivability					DC09				
D. Schedule Profile					FY 1999				
					FY 1998				
					1	2	3	4	
Type Classify FOFL (FOL)									
Complete FOSH Habitability Study									
Conduct market survey on FOFL. Conduct test									
and Evaluation on MTL prototypes									
Complete AMS testing prepare LRIP contract									
Conduct MDS MI build prototypes									
Award Development contract airbeam shelter									
Type Classify FOFL (MTL)									
* Milestones Completed									

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

DC09

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	1949	1618	1425
Support and Management	95	92	66
Test and Evaluation	80	185	118
Total	2124	1895	1609

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SSCOM	In-House					757	787	711	Cont	Cont
Hunter Mfg	Various	Various				1192	801	690	Cont	Cont
Guild Assoc										
Weatherhaven										
Hansen Weather										
GTS										
ARO	MIPR						30	30	Cont	Cont
TRADOC										
VA Med Ctr										
McClellan AFB										
Army Nat'l Guard										
Support and Management Organizations										
SSCOM						95	92	66	Cont	Cont
Test and Evaluation Organizations										
TECOM/YPG						80	185	118	Cont	Cont

Government Furnished Property: None

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

4 - Demonstration and Validation

PROJECT

DC09

	<u>Total Prior to FY 1997</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Budget to Complete</u>	<u>Total Program</u>
Subtotal Product Development		1949	1618	1425	Cont	1425
Subtotal Support and Management		95	92	66	Cont	66
Subtotal Test and Evaluation		80	185	118	Cont	118
Total Project		2124	1895	1609	Cont	1609

Project DC09

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February 1998

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603747A Soldier Support and Survivability

PROJECT

D610

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D610 Food Advanced Development	1849	2193	2582	3131	3395	3819	3853	Continuing	Continuing

A. Mission Description and Justification: The project funds the development of Joint Service Food/Food Service Equipment to improve individual combat effectiveness and reduce logistics burden and operation & support (O&S) costs of subsistence support for service personnel. Enhance rations by increasing quality, acceptability and variety. Develop multi-fuel, rapidly deployable field food service equipment to support combat, humanitarian missions and operations-other-than-war. Improve equipment to enhance safety in food service, utilize battlefield fuel and decrease fuel and water requirements. Program is reviewed and validated twice annually by the Department of Defense (DoD) Food and Nutrition Research and Engineering Board as part of the Joint Service Food Program. Additionally, the project will, conduct advanced development of improved subsistence and subsistence support items to enhance soldier effectiveness and quality of life in all four Services as part of an integrated DoD Food Research, Development, Test, Evaluation and Engineering (RDTE&E) program.

Acquisition Strategy: Developments transition to Engineering and Manufacturing Development and procurement.

FY 1997 Accomplishments:

- 200 Completed study on electronic recipe distribution, modified existing program for Lotus Notes application and started transmission of new and approved recipe database file to the Services.
- 610 Completed field test of new MRE components and obtained OTSG and JSORF approval for fielding; completed testing and transitioned Ration Snack Pack for procurement in emergency contingencies; completed field testing of 12 Meal Cold Weather menu designs and received approval for transitioning to procurement; transitioned procurement documents for medical supplement to the Unitized Group Ration (UGR) to DLA.
- 263 Completed development of four MRE ration prototypes to reduce cost, weight and volume and logistical impact on supply system.
- 160 Developed five new types of Mobility Enhancing Ration Components (MERCs) and commercially produced test components for field evaluation with operational forces. Obtained approval for two Cooperative Research and Development Agreements (CRADAs) for technology transfer.
- 171 Performed technical feasibility testing (TFT) on NDI waste reduction/handling equipment which will reduce the field back-haul and trash removal requirements and transitioned optimum system to procurement.
- 385 Initiated design and fabrication of Marine Corps Rapid Deployment Kitchen (RDK) based on centralized heating technology providing highly mobile, efficient field feeding capability.
- 60 Evaluated Thermally Efficient Field Serving Equipment to optimize food quality and transitioned procurement documentation to Marine Corps.
- Total 1849

Project D610

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BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation		0603747A Soldier Support and Survivability	D610
FY 1998 Planned Program:			
•	298	Fabricate Non-Electric Field Refrigerator prototype, conduct technical user testing and develop performance specification for procurement.	
•	536	Complete fabrication and initiate test and evaluation of the Rapid Deployment Kitchen (RDK).	
•	229	Complete test and evaluation of future shipboard galley concept incorporating new food service equipment technologies.	
•	360	Identify and conduct user testing of improvements for individual and group ration systems to improve acceptability and enhance combat effectiveness. Transition selected heat and serve ration components and MRE improvements, increasing menu variety. Update B-ration menu for Marine Corps.	
•	327	Field test MERC to quantify warfighter acceptability / mobility enhancement and transition to procurement for use in MRE menus.	
•	214	Field test nutrient optimized MRE ration prototypes to minimize weight/cube/cost and conduct user field test to determine effect on level of acceptance and consumption.	
•	87	Procure and conduct technical testing of steam generator to provide immediate enhancement to existing Field Sanitation Systems.	
•	87	Initiate Fielded Food Service Equipment Improvement Program.	
•	55	Small Business Innovative Research/Small Business Technology Transfer Programs.	
	Total		2193
FY 1999 Planned Program:			
•	280	Fabricate prototype Marine Corps Expeditionary Field Feeding Delivery System, conduct field evaluations and transfer procurement documents.	
•	260	Design and fabricate the Catalytic Diesel Vaporizer for specific application to effectively integrate with commercial off the shelf food service equipment.	
•	240	Develop company-sized kitchen and fabricate prototype of the Kitchen, Company Level Field Feeding - Future.	
•	200	Complete storage studies/demonstrations of glass coated polymeric tray with easy open lid to refine concepts, ensure high acceptability and optimize functionality and affordability.	
•	380	Continue to identify and conduct user testing of improvements for individual and group ration systems. Transition selected heat and serve ration components and MRE improvements, increasing menu variety and acceptance.	
•	255	Complete field tests in different environments to establish effectiveness of selected performance enhancing ration components (PERCs) and supplements, demonstrate overall producibility and suitability of PERCs-based rations and transition to procurement.	
•	369	Complete MRE ration redesign for nutritional optimization and logistical parameters and conduct follow-up field testing to demonstrate improved acceptance/consumption and reduced logistic burden.	
•	250	Evaluate emerging food service equipment technology for direct shipboard application to reduce life cycle costs.	
•	220	Develop a baseline on which to design future "on demand" feeding systems to reduce logistical burden.	
•	128	Continue executing fielded food service equipment improvement program	
	Total		2582

Project D610

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DATE February 1998									
PROJECT D610									
PE NUMBER AND TITLE									
0603747A Soldier Support and Survivability									
FY 1997 FY 1998 FY 1999									
BUDGET ACTIVITY									
4 - Demonstration and Validation									
D. Schedule Profile									
1	2	3	4	1	2	3	4	1	2
			X*						
			X*						
Completed Technical Feasibility Testing (TFT) of waste handling equipment									
Fabricate USMC field kitchen based on centralized heating technology									
Conduct field test of logistically effective ration design								X	
Conduct user testing of rations applying glass coating technology								X	
Complete testing of the Catalytic Diesel Vaporizer									X
* Milestone Complete									

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603747A Soldier Support and Survivability

D610

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	1516	1710	2004
Support and Management	97	113	128
Test and Evaluation	236	370	450
Total	1849	2193	2582

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
SSCOM	In-House					1141	1306	1538	Cont	3985
GTS	Various	Various				375	404	466	Cont	1245

Hunter Mfg

SSL

GSA

OGA

Support and Management Organizations

SSCOM

Test and Evaluation Organizations

TECOM/OGA

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

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BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603747A Soldier Support and Survivability								D669	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D669 Clothing and Equipment		2514	3236	3390	4158	3699	5261	5299	Continuing	Continuing	
<p>A. Mission Description and Justification Use state-of-the-art technology to develop improved tactical and non-tactical clothing and individual equipment to enhance the lethality, survivability, sustainability, and mobility of the individual soldier.</p> <p>Acquisition Strategy: Developments transition to engineering and manufacturing development (EMD) followed by initial fielding and sustainment.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 789 Conduct market investigation, test new materials, develop initial design concepts for Advanced Bomb Suit (ABS) and Cold Weather Canteen. 228 Conducted Expert choice model on Operational Requirements Document for Advanced Laser Protective System (ALPS). Completed market survey, developed SOW, acquisition documentation, initial performance specification, and conducted early user evaluation. 810 Completed Phase III Development Test (DT/OT) and staffed MS III documentation for STEPO. 687 Program Management 2514 <p>Total 2514</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 950 Conduct early user evaluation, freeze design, fabricate test prototypes, and initiate DT/OT of the Advanced Bomb Suit and Cold Weather Canteen. 246 Develop initial design concepts with ballistic protective characteristics, conduct technical and early evaluations and downselect design/materials for test for test prototypes for ALPS. 225 Conduct market investigation, test materials, develop initial design modular cold weather glove system. 290 Refine initial design concepts, conduct technical tests and early user evaluation, down select materials and designs for the Concealable Body Armor, and transition to EMD. 400 Conduct early user evaluation of materials and designs for a Combat Clothing P3I and transition to EMD. 688 Release performance specification and SOW, award phased contract for ALPS and conduct lab evaluation/fit analysis of ALPS frame design. 76 Conduct MS III for STEPO, TC and transition to production. 286 PM-Management. 75 Small Business Innovative Research/Small Business Technology Transfer 3236 <p>Total 3236</p>											

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PE NUMBER AND TITLE

0603747A Soldier Support and Survivability

D669

•	515	Complete DT/OT and assessment reports, obtain MS III approval and transition the Advanced Bomb Suit and Cold Weather Canteen to production.
•	800	Integrate laser protective capabilities into configuration, conduct user testing for ALPS.
•	1285	Fabricate test prototypes, conduct Phase I of DT/OT, and transition the Combat Clothing P3I, and transition to EMD.
•	245	Complete evaluations and approval of Concealable Body Armor for transitions.
•	545	PM Management, initiate market surveys, operational requirements documentation for programs identified for transition from ATC/ACTD.
	3390	Total

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
--	---------	---------	---------

3339

11 1222
3374

3339

C. Other Program Funding Summary:

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Comp</u>	<u>Cost</u>
	4525	3571	4351	3631	4548	4962	5009	Cont	Cont
	56339	42405	54222	79734	82242	84025	85848	Cont	Cont

	FY 1997	FY 1998	FY 1999
--	---------	---------	---------

Develop design concept for ALPS

X
X*

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998		PROJECT								
BUDGET ACTIVITY										PE NUMBER AND TITLE						D669						
4 - Demonstration and Validation										0603747A Soldier Support and Survivability												
D. <u>Schedule Profile</u>										FY 1997				FY 1998				FY 1999				
										1	2	3	4	1	2	3	4	1	2	3	4	
Early user evaluation of the ABS suit and the Cold Weather Canteen/Test Items/DT and OT and reports/MS III and transition to procurement.																						
Initial designs of the Concealable Body Armor/Technical test and early user evaluations/Select materials and early user evaluation and transition to EMD.																						
Early user evaluation of materials and designs for the Combat Clothing P3I, Analyze and transition to EMD.																						

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1998	PROJECT D669
BUDGET ACTIVITY	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability		
4 - Demonstration and Validation			
A. <u>Project Cost Breakdown</u>	FY 1997	FY 1998	FY 1999
Product Development	1017	2950	3390
Support and Management	687	286	
Test and Evaluation	810		
Total	2514	3236	3390
B. <u>Budget Acquisition History and Planning Information:</u> Not applicable			

Project D669

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603766A Tactical Exploitation of National
Capabilities (TENCAP) - Demonstration/Validation
(TIARA)PROJECT
D907

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D907 Tactical Exploitation of National Capabilities - Adv Dev	24714	19566	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification: Supports the tactical commander's intelligence requirements for contingency force development and deep battle targeting as stated in Field Manual 100-5. Specific developments are managed within the Army's Tactical Exploitation of National Capabilities (TENCAP) program. The scope of the program is to leverage specific data and capabilities available from existing and emerging National and selected theater capabilities that meet stated Army tactical intelligence information and targeting needs to correct deficiencies, and develop concepts, techniques and prototype processors to exploit critical data for near-real time integration into the appropriate tactical echelon. This project supports the advanced development/enhancement of the Mobile Integrated Tactical Terminal (MITT), Forward Area Support Terminal (FAST), Tactical Exploitation System (TES), and Advanced Electronic Processing and Dissemination System (AEPDS). The Army's emerging TES will incorporate the standards and protocols dictated by the Common Imagery Ground Surface System (CIGSS) program. TES brings all of the existing and emerging Army TENCAP capabilities [AEPDS, Modernized Imagery Exploitation System (MIES), and Enhanced Tactical Radar Correlator (ETRAC)] into an integrated common baseline; downsized modular and scaleable to meet a wide range of contingency requirements. TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems, including MIES and ETRAC that are funded under the Defense Airborne Reconnaissance Program (DARP) (PE 0305154D). Specific details are provided in the Tactical Intelligence and Related Activities (TIARA) Congressional Justification Book, Volume II, and in the Army TENCAP Master Plan. This Program Element (PE) focuses on efforts associated with advanced technology development used to demonstrate general military utility to include demonstration and validation in the area of TENCAP and is correctly placed in Budget Activity 4.

Acquisition Strategy: As pioneers in rapid acquisition, ASPO's success in delivering systems as those described above to warfighters can be directly attributed to an environment emphasizing stable funding, low density acquisition, minimal use of MILSPECS, and managed competition. By tailoring existing technology, leveraging the best commercial practices, and using commercial and government off the shelf software, the Army Space Program Office (ASPO) minimizes risk while maximizing efficiency. Strong user involvement, a robust operations and maintenance program and a vigorous technology insertion effort ensure programmatic success. Finally, dedicated cradle to grave Integrated Logistics Support (ILS) for TENCAP systems is accomplished through a coordinated effort by government and contractor personnel and facilities.

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BUDGET ACTIVITY	PE NUMBER AND TITLE																						
4 - Demonstration and Validation	0603766A Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)	February 1998	D907																				
<p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 8054 Continued to pursue technology for the refinement of the TENCAP common baseline for fully exploiting national capabilities to meet emerging worldwide contingency scenarios 10027 Initiated advanced development efforts for ground processing technologies for new national sensors capabilities that will be incorporated into TES 5054 Continued support to TENCAP program management with administrative activities (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC). 1579 Continued support to efforts being developed under PE 0305154D (DARP) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC). <p>Total 24714</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 4731 Continue to pursue technology for the refinement of the TENCAP common baseline for fully exploiting national capabilities to meet emerging worldwide contingency scenarios. In addition to staying current with national and theater capabilities, will include integration of Defense Switched Network (DSN) and migration of Defense Message System (DMS) into the TENCAP systems. 9371 Continue advanced development of TES Program 3974 Continue support to TENCAP program management with administrative activities (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC). 1032 Continue support to efforts being developed under PE 0305154D (DARP) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC). 458 Small Business Innovative Research/Small Business Technology Transfer Programs. <p>Total 19566</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>B. Project Change Summary</p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY1998/1999 President's Budget</td> <td>25354</td> <td>20920</td> <td>23714</td> </tr> <tr> <td>Appropriated Value</td> <td>26060</td> <td>20920</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-1346</td> <td>-1354</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>24714</td> <td>19566</td> <td>0</td> </tr> </tbody> </table> <p>Change Summary Explanation:</p> <p>Funding: FY99 - All efforts funded under this PE/PROJ were consolidated with PE 0604766A, Project D909.</p> <p>Schedule: Milestones previously scheduled in FY99 under this PE/PROJ have been moved to PE 0604766A, Project D909.</p> <p>Technical: This PE/PROJ was consolidated with PE 0604766A Project D909 because the majority of TENCAP program is in Engineering Development rather than Advanced Development</p>					FY 1997	FY 1998	FY 1999	FY1998/1999 President's Budget	25354	20920	23714	Appropriated Value	26060	20920		Adjustments to Appropriated Value	-1346	-1354		FY 1999 President's Budget	24714	19566	0
	FY 1997	FY 1998	FY 1999																				
FY1998/1999 President's Budget	25354	20920	23714																				
Appropriated Value	26060	20920																					
Adjustments to Appropriated Value	-1346	-1354																					
FY 1999 President's Budget	24714	19566	0																				

Project D907

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
D907

4 - Demonstration and Validation

0603766A Tactical Exploitation of National
Capabilities (TENCAP) - Demonstration/Validation
(TIARA)

C. Other Program Funding Summary*

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5									
PE 64766.D909 TENCAP	14839	17807						Cont	
RDTE, D Budget Activity 7									
PE 0305154D Project P531 DARP	49395	0						N/A	
PE 0305208D Project PD8Z DARP	0	30377						Cont	
Other Procurement Army, OPA-2									
BZ7315 TENCAP	1818	1629						Cont	
Procurement, Defense Wide									
PE 0305154D Project P531	89945	0						N/A	
PE 0305208D Project PD8Z DARP	0	94070						Cont	

* FY99-03 reflected in PE 0604766A Project D909

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
1	2	3	4	1	2	3	4

Initiate Prototype Development for TES
Complete Adv Dev of DAMA Appliqué
into TENCAP Common Baseline
SUCCESS Radios
Initiate Integration of DSN and migration
of DMS into TENCAP Systems

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Project D907

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	PROJECT																																				
BUDGET ACTIVITY	PE NUMBER AND TITLE																																						
4 - Demonstration and Validation	0603766A Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)	February 1998	D907																																				
<p>A. Project Cost Breakdown</p> <table> <tr> <th></th><th>FY 1997</th><th>FY 1998</th><th>FY 1999</th></tr> <tr> <td>Common Baseline (*1)</td><td>8054</td><td>4731</td><td>0</td></tr> <tr> <td>TES</td><td>10027</td><td>9371</td><td>0</td></tr> <tr> <td>ASPO In-House (*2, *3)</td><td>2765</td><td>2389</td><td>0</td></tr> <tr> <td>FFRDC</td><td>0</td><td>97</td><td>0</td></tr> <tr> <td>System Engineering (Contractor) (*2)</td><td>2668</td><td>1486</td><td>0</td></tr> <tr> <td>System Engineering (Government) (*2)</td><td>1200</td><td>1034</td><td>0</td></tr> <tr> <td>SBIR/STTR</td><td></td><td>458</td><td></td></tr> <tr> <td>Total</td><td>24714</td><td>19566</td><td>0</td></tr> </table> <p>(*1) TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems [including MIES and ETRAC that are funded under the DARP (PE 0305154D)].</p> <p>(*2) Approximately 40% of program management cost in FY 1997 through FY 1998 support efforts being developed under PE 0305154D.P531 and PE 0305308D.PD8Z.</p> <p>(*3) The ASPO In-House support in this project also supports efforts being developed under PE 0604766A.D909.</p> <p>B. Budget Acquisition History and Planning Information: Not Applicable</p>					FY 1997	FY 1998	FY 1999	Common Baseline (*1)	8054	4731	0	TES	10027	9371	0	ASPO In-House (*2, *3)	2765	2389	0	FFRDC	0	97	0	System Engineering (Contractor) (*2)	2668	1486	0	System Engineering (Government) (*2)	1200	1034	0	SBIR/STTR		458		Total	24714	19566	0
	FY 1997	FY 1998	FY 1999																																				
Common Baseline (*1)	8054	4731	0																																				
TES	10027	9371	0																																				
ASPO In-House (*2, *3)	2765	2389	0																																				
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System Engineering (Contractor) (*2)	2668	1486	0																																				
System Engineering (Government) (*2)	1200	1034	0																																				
SBIR/STTR		458																																					
Total	24714	19566	0																																				

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603774A Night Vision Systems - Advanced Development

D131

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D131 Night Vision Systems Advanced Development	2254	2848	2681	3015	3779	4568	4488	Continuing	Continuing

A. Mission Description and Justification This project encompasses the advanced development phase of the Army acquisition cycle for Night Vision and Electro-Optic (NVEO) devices/systems and prepares them for engineering development. The key objective of this program is to provide NVEO devices/systems for acquisition and engagement of enemy targets at maximum weapon system ranges under degraded battlefield/weather conditions and in countermeasure environments. This project provides the funding necessary to implement advances for product improvement or horizontal technology integration (HTI) to upgrade current capabilities in the future. The efforts are centered around development of countermeasure and electro-optic sensors for the individual soldiers and combat vehicles to meet stated Army deficiencies such as fratricide reduction. The focus of these efforts is on advanced technology development; therefore, this project is properly placed in Budget Activity 4.

Acquisition Strategy: The advances and improvements for Second Generation FLIR (SGF) utilize development contracts that were competitively awarded using best value source selection procedures.

FY 1997 Accomplishments:

- 286 Completed support for Stingray participation in exercises.
- 255 Qualified SADA II Second Source.
- 1713 Developed advanced SGF "B" kit features (e.g., frame integration, extended range performance and laser protection) for M2A3, M3A3, M1A2 SEP and LRAS3.

Total 2254

FY 1998 Planned Program:

- 1098 Develop additional Laser Protection for SGF HTI ground "B" Kit to be integrated into M2A3, M3A3, M1A2 SEP, and LRAS3.
- 580 Integrate and demonstrate sight level ground "B" kit advanced capabilities.
- 798 Prepare and demonstrate improved detector capability for aviation systems.
- 308 Evaluate of light weight multispectral sensor package at White Sands Missile Range (WSMR).
- 64 Small Business Innovative Research/Small Business Technology Transfer Programs.

Total 2848

Project D131

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Demonstration and Validation		0603774A Night Vision Systems - Advanced Development	
FY 1999 Planned Program:			
• 1259 Integrate and demonstrate sight level ground "B" kit advanced capabilities into M2A3, M3A3, M1A2 SEP, and LRA33.			
• 1120 Demonstrate existing ATR/ATC interface capability with Aviation/Ground "B" kit.			
• 302 Prepare and demonstrate sight level Aviation detector capability.			
Total	2681		
B. Project Change Summary			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		2769	2939
Adjustments to Appropriated Value		2769	2939
FY 1999 President's Budget		-515	-91
		2254	2848
			2681
Changes Summary Explanation: Funding: FY 1997 (-515) reprogrammed to higher priority requirements, (-450) CIDDS Reprogramming. Technical: Aviation trade studies project moved from PE 0603774A to PE 0604710A DL69, will analyze strategies for upgrading the FLIR sensor in the Apache Target Acquisition Designation System/Pilot Night Vision System (TADS/PNVS).			
C. Other Program Funding Summary			
PE 0602709A/Night Vision and Electro-Optical Technology RDTE, A Budget Activity 3		FY 1997	FY 1998
PE 0603710A/Night Vision Advanced Development RDTE, A Budget Activity 3		16935	16712
PE 0604710A/Night Vision Devices Engineering Development RDTE, A Budget Activity 5		28584	18705
		33970	35052
			21311
			19022
			18992
			31553
			33487
			34244
			19638
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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603774A Night Vision Systems - Advanced

D131

Development

D. Schedule Profile

FY 1998

FY 1999

	1	2	3	4	1	2	3	4	1	2	3	4
Develop laser protection for vehicles					X*	X	X	X				
Develop advanced optical assembly					X*	X	X	X				
Prepare/Demonstrate integration of Ground B Kit Advanced capabilities on vehicles (Test)									X	X	X	X
Evaluate Light Weight Multispectral Sensor package						X	X	X				
Develop ATR/ATC capability/interface with Aviation and Ground B Kit									X	X	X	X
Prepare/Demonstrate Aviation Advanced capabilities (Test)									X	X	X	X

*Milestone Completed

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT	
4 - Demonstration and Validation	0603774A Night Vision Systems - Advanced Development		D131	
A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999	
Primary Hardware Development	1788	1973	2098	
Contractor Engineering / Trade Studies	0	0	0	
Government Engineering Support	180	205	207	
Travel	20	20	20	
Miscellaneous	7	3	4	
Development Test & Evaluation	259	583	352	
Small Business Innovative Research/Tech Transfer Programs		64		
Total	2254	2848	2681	
B. Budget Acquisition History and Planning Information: Not applicable				

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603790A NATO Research & Development

D691

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D691 NATO Research and Development	9495	8866	11161	11300	11900	12100	12300	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program implements the provisions of Title 10 U.S. Code, Section 2350a, Cooperative Research and Development (R&D) Projects: Allied Countries. The objective is to improve, through the application of emerging technologies, the conventional defense capabilities of the United States, the North Atlantic Treaty Organization (NATO), and U.S. major non-NATO allies. This program element only funds the U.S. equitable share of the cooperative R&D project spent in the U.S. Projects are implemented with the allied partners through international agreements which define the scope, cost and work sharing arrangements, management, contracting, security, data protection and third party transfers. By technology sharing the program jointly develops equipment with our allies to improve operational efforts by achieving multi-national force compatibility through the use of similar equipment and improved interfaces. Funds support all the R&D costs including the identification of cooperative opportunities and administration of the program. All funds are used to pay for the U.S. work share in the United States at U.S. Government and U.S. contractor's facilities. This program focuses on international cooperative technology demonstration, validation, and interoperability of the Battlefield Combat Identification System, Force XXI Battle Command Brigade & Below (FBCB2)/Applique Systems, Adaptive Digital Beamforming for THAAD radars, helicopter helmet mounted displays, eyesafe laser radar, artillery command and control, standoff chemical detectors, kinetic energy penetrators, signal jamming subsystems, and is therefore countermeasures, eyesafe laser radar, artillery command and control, standoff chemical detectors, kinetic energy penetrators, signal jamming subsystems, and is therefore correctly placed in Budget Activity 4. The final program will be reported separately as required by 10 USC 2350a(f).

FY 1997 Accomplishments:

- 2877 **Combat Identification (CI) Interoperability Demonstration (Partners: France, Germany, United Kingdom):** Integrated the Battlefield Combat Identification System (BCIS) on armored vehicles, completed interoperability trials with FR, GE, and UK prototype systems in Munster, GE.
- 2005 **Battlefield Command and Control (C2) Systems Interoperability (Partner: Germany):** Implemented, tested and evaluated message exchange through the Intelligent Translation Gateway, over the Defense Simulation Internet and the Digital Interface Lab in a simulated Operational Test.
- 1500 **Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom):** Improved detection in severe Electronic CM environments. Extended narrowband ABFT to THAAD radar, developed ABFT architectures and assessed design trade-offs.
- 1200 **Covert Night/Day Operations in Rotorcraft (CONDOR) (Partner: United Kingdom):** Improved helicopter helmet mount display and flight controls. Fabricated Advanced Visionics System (AVS) and Advanced Flight Control System (AFCS) prototypes, system integration and flight tests.
- 1050 **Fighting Vehicle Propulsion Technology Using Ceramic Materials (Partner: Japan):** Developed, tested and characterized advance materials, including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena that provides a breakthrough in fighting vehicle diesel engine designs. Objective is to double combat propulsion system power density and fuel economy.
- 405 **High Technology Switch (Partner: France):** Developed advanced interoperable Asynchronous Transfer Mode (ATM) switches for ATM communications field tests, military networks and test beds, Digital Interoperability Lab (DIL) and Battlefield Information Transition System(BITS).

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Demonstration and Validation	0603790A NATO Research & Development	D691	
FY 1997 Accomplishments: (continued)			
•	385	Extended Air Defense (AD) Command and Control Interoperability (Partner: Germany): Developed system specification for interoperability between US and GE air defense tactical operations centers. Analyzed interoperability elements and prepared pre-design specifications.	
•	73	Report to Congress: Pursuant to 10 USC 2350a, prepared and provided to USD(A&T) the Army section of the 1997 Report to Congress on the International Cooperative Research and Development Program	
Total	9495		
FY 1998 Planned Program:			
•	1925	Battlefield Command and Control (C2) Systems Interoperability (Partner: Germany): Continue to test and evaluate message exchange through the Intelligent Translation Gateway, over the Defense Simulation Internet and the Digital Interface Lab in a simulated Operational Environment.	
•	528	Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom): Continue improvement of detection in severe Electronic CM environments. Define ABFT technology insertion program for THAAD Radar objective system, to include beamforming algorithms and required hardware and software modifications. Publish final point design.	
•	933	Covert Night/Day Operations in Rotorcraft (CONDOR) (Partner: United Kingdom): Continue to improve helicopter helmet mount display and flight controls. Fabricate Advanced Visionics System (AVS) and Advanced Flight Control System (AFCS) prototypes, system integration and tests.	
•	371	High Technology Switch (Partner: France): Continue development of advance interoperable Asynchronous Transfer Mode (ATM) switches for ATM communication field tests, military networks and test beds, Digital Interoperability Lab (DIL) and Battlefield Info Transition System (BITS).	
•	47	Extended Air Defense (AD) Command and Control Interoperability (Partner: Germany): Continue the development of system specification to achieve interoperability between US and GE air defense tactical operations centers. Analyze interoperability elements and prepare final specification.	
•	1740	Fighting Vehicle Propulsion Technology using Ceramic Materials (Partner: Japan): Continue to develop, test and characterize advance materials including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena.	
•	669	Focal Plane Array Countermeasures (FPACM) (Partner: United Kingdom): Characterize and assess advanced focal plane array missile seekers and develop electronic countermeasures (ECM) to defeat them through simulation, modeling and lab testing.	
•	670	Cooperative Eyesafe Laser Project (CELRAP) (Partner: Japan): Develop a joint performance specification for a multifunctional eyesafe laser radar for range finding, target profiling, obstacle avoidance, range and terrain mapping. Start brassboard design and subsystem development.	
•	424	Artillery System Cooperation Activities (ASCA) (Partners: France, Germany, United Kingdom): Develop common interface requirements for Allied Field Artillery Command and Control Systems and conduct a field demonstration for interoperability between AFATDS and Allies' systems.	
•	335	Laser Standoff Chemical Detector (LSCD) (Partner: France): Develop detection technology for incorporation in a lightweight, vehicle mountable contamination monitoring system that can detect and quantify in a standoff mode all known types of chemical agent contamination.	
•	335	Advanced Penetrator Development In Tank Munitions (Partner: United Kingdom): Develop an advanced kinetic energy penetrator to defeat upgraded tanks being equipped with Kinetic Energy/Explosively Reactive Armor (KE/ERA). Evaluate technologies and determine design capability.	

Project D691

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4 - Demonstration and Validation

0603790A NATO Research & Development

D691

FY 1998 Planned Program: (continued)

- 198 Low Level Air Picture Interface (LLAPI) (Partners: Canada, Germany, France, Netherlands, United Kingdom): Develop automated interfaces between US and Allied short range air defenses for radar data exchange and demonstrate systems interoperability.
- 236 TACJAM-A Electronic Support Subsystem Upgrades (Partner: United Kingdom): Develop and integrate technology enhancements to current jamming subsystems used on vehicles and aircraft that detect modern signal transmissions.
- 132 Next-Generation Autonomous Vehicle Navigation Control System (AUTOVAV) (Partner: Germany): Initiate design and development of an advanced autonomous vehicle navigation control system. Complete sub-system tests of obstacle detection, classification, and avoidance technologies.
- 100 Report To Congress: Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 1998 Report to Congress on the International Cooperative Research and Development Program
- 223 Small Business Innovative Research/Small Business Technology Transfer Program
- 8866
- Total

FY 1999 Planned Program:

- 1281 Command and Control (C2) Systems Interoperability Program (C2SIP) (Partners: Germany, France, United Kingdom): Integrate work from Battlefield Interoperability Program (BIP), Quadrilateral Interoperability Program (QIP), and the Army Tactical Command & Control Information System (ATCCIS) into an Advance Technology Demonstration (ATD) to achieve NATO levels 4 (messaging) & 5 (database) interoperability.
- 2450 Fighting Vehicle Propulsion Technology using Ceramic Materials (Partner: Japan): Continue to develop, test and characterize advance materials including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena.
- 1000 Focal Plane Array Countermeasures (FPACM) (Partner: United Kingdom): Characterize and assess advanced focal plane array missile seekers and develop electronic countermeasures (ECM) to defeat them through simulation, modeling and lab testing.
- 1000 Cooperative Eyesafe Laser Project (CELRAP) (Partner: Japan): Continue to develop a joint performance specification for a multifunctional, eyesafe laser radar for range finding, target profiling, obstacle avoidance, range and terrain mapping. Fabricate subsystems and brassboard.
- 1000 Next-Generation Autonomous Vehicle Navigation Control System (AUTOVAV) (Partner: Germany): Initiate design and development of an advanced autonomous vehicle navigation control system. Complete sub-system tests of obstacle detection, classification, and avoidance technologies.
- 1000 TACJAM-A Electronic Support Subsystem Upgrades (Partner: United Kingdom): Develop and integrate technology enhancements to current jamming subsystems used on vehicles and aircraft that detect modern signal transmissions.
- 850 Advance Penetrator Development in Tank Munitions (Partner: United Kingdom): Develop an advanced penetrator, and potentially a common cartridge, to defeat modern tanks equipped with Kinetic Energy - Explosively Reactive Armor.
- 830 Artillery System Cooperation Activities (ASCA) (Partners: France, Germany, United Kingdom): Develop common interface requirements for Allied Field Artillery Command and Control Systems and conduct a field demonstration for interoperability between AFATDS and Allies' systems.
- 800 Laser Stand-off Chemical Detector (LSCD) (Partner: France): Develop technology that will allow U.S. troops to detect, identify, and quantify chemical agents from a distance by employment of the preferred doctrine of contamination avoidance.

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FY 1999 Planned Program: (continued)

- 250 Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom): Complete ABFT technology insertion program for THAAD Radar objective system, beamforming algorithms, hardware and software modifications. Publish final point design.
- 300 Low Level Air Picture Interface (LLAPI) (Partners: Canada, Germany, France, Netherlands, United Kingdom): Continue to develop automated interfaces between U.S. and Allied short range air defenses for radar data exchange and demonstrate systems interoperability.
- 200 Combat Identification (CI) Interoperability Demonstration (Partners: France, Germany, United Kingdom): Develop a NATO STANAG for CI based upon the Battlefield Combat Identification System (BCIS) and the completed interoperability trials of prototype systems in Munster, GE.
- 100 Extended Air Defense (AD) Command and Control Interoperability (Partner: Germany): Expand system specification development to achieve interoperability between US and GE air defense tactical operations centers (TOCs) to include the TOCs of the Netherlands and the United Kingdom.
- 100 Report to Congress: Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 1999 Report to Congress on the International Cooperative Research and Development Program

Total 11161

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 Pres Bud Request

FY 1997

9755

9755

-260

9495

FY 1998

13168

9168

-302

8866

FY 1999

11169

11161

Change Summary Explanation: Funding: FY 1998 - (-4302) reduction due to a Congressional reduction (-4000), plus an undistributed Congressional reduction (-302).

C. Other Program Funding Summary: None

D. Schedule Profile

	FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2
Combat Identification Interoperability						
Complete Fabrication and Integration		X				
Trials and Demonstration Completed			X			
Initial Data Report				X		
Complete Final Report					X	
Complete NATO STANAG for CI						X
Command & Control Interoperability						
Complete Hardware/Software Installation						
Complete Lab Demo/Tests & Simulations					X	

Combat Identification Interoperability

Complete Fabrication and Integration

Trials and Demonstration Completed

Initial Data Report

Complete Final Report

Complete NATO STANAG for CI

Command & Control Interoperability

Complete Hardware/Software Installation

Complete Lab Demo/Tests & Simulations

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D. Schedule Profile

FY 1997 FY 1998 FY 1999

	1	2	3	4	1	2	3	4	1	2	3	4
Complete Field Demonstration												
Adaptive Beam Forming Technology												
Complete Algorithms/Architecture	X											
Complete Preliminary Point Design		X										
Complete US & UK Design Assessments				X								
Complete Final Point Design								X				
Complete Final Report											X	

CONDOR

Complete Integration Tests

Complete Flight Test & Evaluation

High Technology Switch

Complete Simulation and Commo Link

Complete Test & Evaluation Plan

Complete Architecture Test & Evaluation

Complete Final Report

Extended Air Defense

Complete Integration Analysis

Complete Trade-off Analysis

Complete Final Report

Fighting Vehicle Propulsion Technology

Contract Awards

Preliminary Engine Analysis Complete

Materials Characterization/Test Complete

Combustion Test and Analysis Complete

Focal Plane Array Countermeasures

Complete Missile Seeker Characterization

Mathematical Model Development

Complete Software Simulations

Develop Advanced CM Model

Cooperative Eyesafe Laser Project

Complete Performance Specification

Complete Subsystem Development

Complete Brassboard Integration

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BUDGET ACTIVITY		PE NUMBER AND TITLE												PROJECT
4 - Demonstration and Validation		0603790A NATO Research & Development												D691
D. <u>Schedule Profile</u>		FY 1997				FY 1998				FY 1999				
		1	2	3	4	1	2	3	4	1	2	3	4	
Artillery Systems Cooperation Activity														
MOU Concluded							X							
Complete Interface Requirements														
Complete Phase I Technical Test									X					
Complete Phase I Operational Tests											X			
Complete Phase II Tests													X	
Low Level Air Picture Interface														
Complete MOU Amendment(CA,NL,UK)					X									
Complete Interface Development									X					
Complete Operational Testing													X	
AUTONAV														
MOU Project Arrangement Concluded		X												
Complete Prototype Design							X							
Complete Fabrication & Integration												X		
TACJAM-A														
MOU Concluded														
Complete Prototype Hardware Upgrades					X									
Complete Systems Integration & Testing													X	
Laser Standoff Chemical Detector														
MOU Project Arrangement Concluded							X							
Complete Analysis of Spectral Properties												X		
Begin Laser Prototype Development													X	
Advance Penetrator in Tank Munitions														
MOU Project Arrangement Concluded							X							
Complete Penetrator Design Studies										X				
Complete Penetrator Development & Test													X	

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

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A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Combat Identification Interoperability Demonstration (CIID)	2877	0	200
Command & Control Systems Interoperability Program (C2SIP)	2005	1951	1000
Adaptive Beam Form Technology (ABFT)	1500	528	250
Covert Night/Day Operations in Rotorcraft (CONDOR)	1200	933	0
High Technology Switch Development (HTSD)	405	371	0
Extended Air Defense Command & Control Interoperability	385	47	100
Fighting Vehicle Propulsion Technology (Ceramic Materials)	1050	1740	2350
Focal Plane Array Countermeasures (FPACM)	0	669	1000
Cooperative Eyesafe Laser Project (CELRAP)	0	670	1200
Artillery Systems Cooperation Activities (ASCA)	0	424	830
Low Level Air Picture Interface (LLAPI)	0	198	300
TACJAM-A Electronic Support Subsystem Upgrades	0	236	1000
Autonomous Vehicle Navigation Control System (AUTONAV)	0	132	1000
Laser Stand-Off Chemical Detector (LSCD)	0	335	800
Advance Penetrator Development in Tank Munitions	0	335	850
Report To Congress	73	297	281
Total	9495	8866	11161

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Hughes Training	CPIF	Jan 94	1600	1600		1100	568	0	0	1668
Herdon, VA										
McDonnell Douglas	CPIF	Nov 96	800	800		400	500	0	0	900
Mesa, AZ										
Quantum Research	FFP	May 95	350	350		300	50	0	0	350
Huntsville, AL										

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BUDGET ACTIVITY											
4 - Demonstration and Validation										PE NUMBER AND TITLE	
Contractor or										0603790A NATO Research & Development	
Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
CSC	CPFF	Aug 96	4800	4800	FY 1997	2075	3375	0	0	5450	
Ft Washington, PA											
TRW	CPAF	Mar 96	1313	1313		1267	0	0	0	1267	
Redondo Bch, CA											
Madentech	CPFF	Feb 95	500	500		250	350	0	0	600	
Shrewsbury, NJ											
Georgia Tech	CPFF	Aug 94	2920	2920		1300	680	384	560	2924	
Atlanta, GA											
Dynetics	CPFF	Aug 94	150	150		150	0	0	0	150	
Huntsville, AL											
Mitre	FFRDC	Mar 96	100	100		100	0	0	0	100	
Boston, MA											
Wayne State Univ	CPFF	May 96	500	500		250	350	0	0	600	
Detroit, MI											
Rutgers Univ	CPFF	May 96	300	300		150	150	0	0	300	
Brunswick, NJ											
SRI	CPFF	Feb 96	450	450		250	200	0	0	450	
Menlo Park , CA											
TBD	Competitive Best Value	TBD	TBD	TBD		472	613	7285	Cont	8370	
Nichols Research	CPFF	Dec 96	200	200		0	300	0	0	300	
Huntsville, AL											
Nuclear Metals Inc.	CPFF	Dec 98	600	600		0	0	404	300	704	
Concord, MA											
Aerojet Ordnance	CPFF	Dec 98	600	600		0	0	404	300	704	
Jonesboro, TN											
Olin Ordnance	CPFF	Dec 98	100	100		0	0	154	50	204	
St. Petersburg, FL											
Alliant	CPFF	Dec 98	70	70		0	0	139	35	174	
Minnetonka, MN											
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BUDGET ACTIVITY					PE NUMBER AND TITLE			D691		
4 - Demonstration and Validation					0603790A NATO Research & Development					
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Support and Management Organizations										
ATCOM	MIPR					100	100	204	Cont	404
Ft Eustis, VA										
CECOM	MIPR					150	250	254	Cont	654
Ft Monmouth, NJ										
TACOM	MIPR					150	250	254	Cont	654
Warren, MI										
ICPA	MIPR					181	300	304	Cont	785
APG, MD										
PM ADCCS	MIPR					100	0	0	0	100
Huntsville, AL										
PM THAAD	MIPR					200	0	0	0	200
Huntsville, AL										
LOGSA	MIPR					125	25	129	Cont	279
Huntsville, AL										
MICOM	MIPR					0	130	250	Cont	380
Huntsville, AL										
PM TMAS	MIPR					0	50	150	Cont	200
Dover, NJ										
LOGSA	MIPR					25	25	134	Cont	184
Huntsville, AL										
Test and Evaluation Organizations										
AMSAA	MIPR					150	250	204	Cont	604
APG, MD										
CECOM	MIPR					150	150	204	Cont	504
Ft Monmouth, NJ										
Army Research Lab, APG, MD	MIPR					100	200	304	Cont	604
Government Furnished Property: None										
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	<u>Total Prior to FY 1997</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Budget to Complete</u>	<u>Total Program</u>
Subtotal Product Development		8064	7136	8770	Cont	25215
Subtotal Support and Management		1031	1130	1679	Cont	3840
Subtotal Test and Evaluation		400	600	712	Cont	1712
Total Project	0	9495	8866	11161	Cont	30767

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BUDGET ACTIVITY		PE NUMBER AND TITLE									
4 - Demonstration and Validation		0603801A Aviation - Advanced Development									
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		10648	13696	7487	5872	5993	9436	9819	Continuing	Continuing	
DB32 Advanced Maintenance Concepts and Equipment		2126	2574	2612	3059	3114	3523	3656	Continuing	Continuing	
DB33 Cargo Handling and Mission Support Equipment		1857	1872	2403	2813	2879	3057	3276	Continuing	Continuing	
DB45 Aircrew Integrated Systems		6665	9250	2472	0	0	2856	2887	Continuing	Continuing	

Mission Description and Budget Item Justification: This PE provides advanced development aviation support of tactical programs associated with air mobility, advanced maintenance concepts and equipment, and Aircrew Integrated Systems (ACIS), formerly Aviation Life Support Equipment (ALSE). The projects in this Program Element supports research efforts in the advanced development phase of the acquisition strategy and are correctly placed in Budget Activity 4.

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation	0603801A Aviation - Advanced Development	DB32

4 - Demonstration and Validation

DB32

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB32 Advanced Maintenance Concepts and Equipment	2126	2574	2612	3059	3114	3523	3656	Continuing	Continuing

A. Mission Description and Justification: This project enhances utilization of current and future aircraft by improving the efficiency of maintenance (primarily in the area of diagnostics/prognostics) and servicing operations by validating new maintenance concepts to improve man machine interface, enhancing aircraft maintenance procedures and reducing operating and support costs. Included in the project are Digitized Aviation Logistics (DAL) elements such as: Portable Maintenance Aids (PMA), database management software, on-board diagnostics, digital source collector, health/usage monitoring system, trending analysis, and support infrastructure.

Acquisition Strategy: This project is an aggregate of advanced maintenance concepts-related projects. While the detailed acquisition strategy varies from project to project, the general strategy for each individual project is to complete the development effort through Government test (developmental and operational). Program documentation for milestone decision is prepared, as appropriate, concurrently with the development effort in preparation for program transition to the organization responsible for production and fielding.

FY 1997 Accomplishments:

- 940 Began development of portable maintenance tools designed to utilize a CATEA data in the diagnosis and repair of aircraft systems; in addition, tools that support flexible scheduling of phased maintenance and tools that integrate the aircrew as part of the diagnostic and troubleshooting procedure.
- 1186 Finalized an infrastructure definition to support a digitized aviation logistics concept beginning at the aircraft through to the higher headquarters and the sustainment base.

Total 2126

FY 1998 Planned Program:

- 574 Conduct the critical design review and complete prototype build and demonstration of the advanced maintenance software tools to be hosted on a Portable Maintenance Aid. These tools include the application of digitized drawings, flexible maintenance scheduling and integration aircrew information in the diagnostic process.
- 550 Engineer and assembly a portable wireless maintenance data network suitable for use in the "shadow of aircraft". The system will have application at the AVUM/AVIM to support and facilitate communication in the maintenance environment. The system will enhance the trouble shooting and repair of aircraft and improve overall logistics at the flight line.
- 290 Conduct a best-fit determination effort for health usage and monitoring functions on the Army helicopter fleet. The modeling analysis will yield the maximum cost benefit technology suite for the specific aircraft.
- 1099 Start evolutionary prototype effort to demonstrate portions of the digital logistics system in order to support unit maintenance. This demonstration will work out interface requirements for the different elements supporting aviation.
- 61 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 2574

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PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

DB32

FY 1999 Planned Program:

- 225 Complete the final design and analysis of the optimum cost benefit health usage and monitoring suite as it applies to the individual force modernized helicopters.
- 525 Demonstrate the planeside wireless maintenance data and communications network and evaluate its influence on improving helicopter support in the specific areas of maintenance troubleshooting and its ability to assist in streamlining aircraft logistics.
- 1487 Continue to grow the prototype logistics system by implementing digital technologies throughout the infrastructure. This will demonstrate improved support processes designed to reduce life cycle costs.
- 375 Plan and execute a demonstration to implement advanced maintenance software tools.

Total 2612

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2181	2656	2599
Appropriated Value	2181	2656	
Adjustments to Appropriated Value	-55	-82	
FY 1999 President's Budget	2126	2574	2612

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,A Budget Activity 2 PE 06022111 Project	20637	22211	29746	30041	31734	32831	33554	Cont	Cont

A47A Aeronautical and Aircraft Weapons Tech*

*Represents total funding in this PE, which only partially supports Project DB32.

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	
Advanced maintenance software tool CDR	1	2	3	4	1	2	3	4
Maintenance data network CDR				X				
Demonstrate maintenance data network				X				
Demonstrate initial advanced digital logistics system				X				X

*Denotes completed effort

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4 - Demonstration and Validation

0603801A Aviation - Advanced Development

DB32

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	370	541	452
Software Development	250	630	754
Systems Engineering	511	436	379
Integrated Logistics Support			
DT/OT			
Program Management	167	165	166
Research Personnel	828	802	861
Miscellaneous			
Total:	2126	2574	2612

B. Budget Acquisition History and Planning Information: Not applicable.

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BUDGET ACTIVITY		PROJECT							
4 - Demonstration and Validation		February 1998							
PE NUMBER AND TITLE		PROJECT							
0603801A Aviation - Advanced Development		DB33							
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB33 Cargo Handling and Mission Support Equipment	1857	1872	2403	2813	2879	3057	3276	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: This project develops equipment, practices, and procedures for the operational improvement of planning, loading, transport, and off-loading of helicopter cargo in all-weather, around the clock combat scenarios. It also replaces obsolete and insupportable ground support equipment with new and standardized multi-output equipment compatible with all Army aircraft models; develops rapid battle repair procedures and tools to speed the return of aircraft to combat ready status; and develops new equipment for aerial recovery of damaged aircraft.</p> <p>Acquisition Strategy: This program is an aggregate of advanced mission support and cargo handling concepts-related projects. While the acquisition strategy varies from project to project, the general strategy is for each project to complete the development effort through Government test (developmental and operational). Program documentation for milestone decisions is prepared, as appropriate, concurrently with the development effort in preparation for program transition to the organization responsible for production and fielding. Programs are executed in coordination with the user and the gaining organization.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 684 Completed the demonstration of advanced internal and external cargo handling systems. 69 Conducted an aircraft cleaning and de-icing system NDI evaluation. 403 Completed knowledge based NDI/NDT inspection and repair procedures for composite components. 261 Continued development of an electronic turbine engine diagnostic system for T-700 engine as part of an overall integrated portable engine test set as part of an overall integrated portable engine test set program. 440 Initiated portable engine test set diagnostic logic database development for entire force modernization aviation fleet that will handle both the aircraft interface as well as the engine itself <p>Total 1857</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 134 Develop portable multimode electric power source for use in aviation contact maintenance operations 938 Continue development of portable engine test diagnostic logic database for force modernization aviation fleet. 122 Initiate development of Aviation Ground Power Unit (AGPU) replacement that meets emerging requirements for the force modernization aviation fleet. 67 Investigate development of advanced external cargo nets that are capable of being retained by the lift aircraft after cargo drop off. 26 Initiate development of next generation general mechanics toolboxes 134 Initiate development of prototype aircraft cleaning system that meets environmental wastewater requirements. 									

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DB33

FY 1998 Planned Program: (continued)

- 67 Investigate environmentally NDI approaches for aircraft deicing.
- 201 Initiate development of field-hardened ND/NDT hardware and neural network software that meets all joint service requirements.
- 136 Initiate development of advanced cargo handling technologies in the areas of remote external cargo monitoring, advanced external cargo winches, internal aircraft communications, and automated weight and balance sensors.
- 47 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 1872

FY 1999 Planned Program:

- 734 Initiate development of objective portable engine diagnostic system for force modernization aviation fleet.
- 534 Continue development AGPU replacement through preliminary design.
- 160 Complete development of advanced cargo nets, next generation toolboxes and aircraft deicing system.
- 200 Continue development of ND/NDT system through preliminary design
- 266 Continue development of advanced cargo handling technologies through preliminary design.
- 243 Initiate development of hidden corrosion detection, prevention and treatment technologies.
- 266 Continue development of aircraft cleaning system through detail design and hardware fabrication.
- Total 2403

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
2010	1931			2391			Compl	Cost
2010	1931						Cont	Cont
-153	-59							
1857	1872			2403				

C. Other Program Funding Summary

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
20637	22211	29746	30041	31734	32831	33554	Compl	Cost
							Cont	Cont

RDTE,A Budget Activity 2 PE 0602211 Project
A47A Aeronautical & Aircraft Weapons Tech.*

* Represents total funding in this PE, which only partially supports Project DB33.

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0603801A Aviation - Advanced Development

DB33

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete prototype contact maintenance electrical power unit							X					
Complete engine diagnostic database							X					
AGPU replacement PDR								X				
Field Test advanced cargo nets							X					
Aircraft cleaning system CDR							X					
Aircraft deicing CDR				X								
Adv Cargo Handling Technologies PDR								X				
NDI/NDT system PDR								X				
Portable Engine Diagnostic System CDR									X			
Portable Engine Diagnostic System										X		
Prototype Fabrication											X	
AGPU Replacement CDR										X		
NDI/NDT CDR										X		
Advanced Cargo Handling Tech CDR										X		

Project DB33

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		
4 - Demonstration and Validation		0603801A Aviation - Advanced Development		
A. Project Cost Breakdown		FY 1997	FY 1998	FY 1999
Primary Hardware Development		600	223	603
Software Development		270	679	422
Systems Engineering		230	233	503
Integrated Logistics Support		0	0	75
Developmental Test/Operational Test (DT/OT)		50	24	25
Program Management		149	155	166
Research Personnel		550	552	592
Miscellaneous		8	6	17
Total		1857	1872	2403
B. Budget Acquisition History and Planning Information:		Not applicable		

Project DB33

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

DB45

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB45 Aircrew Integrated Systems	6665	9250	2472	0	0	2856	2887	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DB45 - Aircrew Integrated Systems (ACIS) - formerly Aviation Life Support Equipment (ALSE) Advanced Development: This project provides advanced development for those systems and items of equipment that are unique and necessary to the sustainment and enhanced survivability of Army aircrews and passengers on the future integrated battlefield and during related training activities. Advanced development programs will focus on the development and evaluation of emerging technologies and the adaptation of commercial and nondevelopmental items (NDI) to military requirements. The Cockpit Air Bag System (CABS) effort has evaluated a variety of supplemental restraint system approaches to improve crew and passenger crash survivability and thereby reduce potential injuries/casualties on UH-60 and SH-60 aircraft; complementing the AH-64 Cockpit Air Bags System Engineering, Manufacturing, and Development (EMD) program, with follow-on adaptation to the OH-58D and CH-47D aircraft. The CABS project transitioned into the EMD life cycle phase during FY 96. The Air Warrior (AW) program will provide the aircrew with a systems approach to chemical and biological (CB) protection, noise protection, microclimatic conditioning, crash and post-crash survivability, concealment and environmental protection, ballistic protection, night vision capability, heads-up displays, nuclear flash protection, directed energy eye protection, and flame/heat protection. The AW design will improve overall aircrew mission performance, aircrew comfort, aircrew and aircrew station interface, safety, and survivability. The Aircrew Integrated Common Helmet (AICH) program, an Air Warrior component, is the major information management, control, and aircraft interface for the aviator. The AICH incorporates Comanche electronics as an Aircraft Retained Unit (ARU) utilizing new flat panel displays on the latest, most advanced Pilot Retained Unit (PRU), the HGU-56/P helmet. Improved Noise Reduction and Speech Intelligibility technology is being developed in concert with the AICH program. None of these efforts duplicate any aircraft program efforts. Both joint and service independent efforts will be pursued under the scope of this project.

Acquisition Strategy: DB45 - Two Air Warrior Program Definition and Risk Reduction (PDRR) development contracts will be awarded in FY 97 to separate competing teams. At Milestone II, there will be a down selection of one team for a combined PDRR and EMD phase.

FY 1997 Accomplishments:

- 6665 Initiated Air Warrior Program Definition and Risk Reduction contractor effort and continued incorporation of AICH, Improved Noise Reduction and Speech Intelligibility technology, and NBC effort
- Total 6665

FY 1998 Planned Program:

- 9027 Continue Air Warrior Program Definition and Risk Reduction (PDRR), and flight test of AICH miniature flat panel displays
 - 223 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 9250

Project DB45

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PROJECT

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

DB45

FY 1999 Planned Program:

- 2472 Continue Air Warrior combined PDRR & EMD effort, begin Development Test and Operation Test effort, and begin post-Air Warrior helmet technology trade studies

Total

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4104	2545	2460
Appropriated Value	8913	9545	
Adjustments to Appropriated Value	-2248	-295	
FY 1999 President's Budget	6665	9250	2472

Change Summary Explanation: Funding: FY 1997 reduction due to reprogramming to higher priority requirements (-2248)

C. Other Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
RDTE, A Budget Activity 5 PE 0604801A Project	4331	4951	6599	6508	9638	3745	2235		
DC45 (Aircrew Integrated Systems -EMD)									
Aircraft Procurement, Army (APA) SSN AZ3110	11286	12190	9050	4470	1445	21468	35214	Cont	Cont
Aircrew Integrated Systems*									

*Represents the entire APA program for ACIS

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
1	2	3	4	1	4	2	4

Air Warrior

Prepared Draft Request for Proposal (RFP) and trade studies received

Release Draft Request for Proposal (RFP) for industry response

Program Definition & Risk Reduction (PDRR) phase incorporated

Finish Statement of Work for competition

PDRR RFP released to industry X*

Source Selection and award contracts

Post Award Conference X

Review Functional Analysis X

Project DB45

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PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

DB45

D. Schedule Profile

FY 1997 FY 1998 FY 1999

1 2 3 4 1 2 3 4 1 2 3 4

Review of contractor design

Source Selection of best team's system

Milestone II decision

Preliminary Design Review

Continue Air Warrior combined PDRR

and EMD/contractor prototype

development

Initiated advanced development /design of

AICH optical display prototypes

Fabrication of AICH prototypes

Lab test AICH optics and displays

AICH Airworthiness testing

Perform AICH flight test

Evaluate AICH flight test & enter EMD

Initiated NBC Initiatives development for

air vehicle and aircrew

Integrated NBC Advanced Initiatives with

Air Warrior PDRR

Cockpit Air Bags System (CABS)

UH-60 CABS instrumented flight test

UH-60 CABS Underwater test

Transition to EMD phase, UH-60 CABS

UH-60 CABS EMD contract award

*Denotes completed effort

Project DB45

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT	
4 - Demonstration and Validation		0603801A Aviation - Advanced Development				February 1998		DB45	
A. Project Cost Breakdown									
Subtotal Product Development Organizations		FY 1997	FY 1998	FY 1999					
Subtotal Support and Management Organizations		5348	5942	1812					
Subtotal Test and Evaluation Organizations		817	2600	580					
Total		500	708	80					
		6665	9250	2472					
B. Budget Acquisition History and Planning Information									
Performing Organizations									
Contractor or Government	Method/Type	Award or Obligation	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete
Activity	Vehicle	Date	EAC	EAC	FY 1997	FY 1998	FY 1999		Total Program
Product Development Organizations									
CABS, Simula, Phoenix, AZ	SS-CPFF	May 1994	3183	3183	2629	0	0	0	2629
Air Warrior AICH, Gentex,	SS-CPFF	Jul 1995			3134	4490	400	100	8124
Carbondale, PA									
Air Warrior, various simulation facilities	C-CPFF	Jun 1995	1208	1208	1123	20	5	5	1178
Air Warrior, AD unknown	C-CPFF	Mar 1997			0	538	5400	1707	7645
Air Warrior, HRED, Aberdeen	MIPR	Jan 1997	360	360	0	300	137	0	437
Proving Grnd, MD									
Miscellaneous	MIPR		866	866	716	0	0	0	716
Support and Management Organizations									
CAS, Huntsville, AL	C-T&M	Dec 1993			656	228	640	130	1654
Camber, Huntsville, AL	C-T&M	Dec 1993			737	100	640	130	1607

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603801A Aviation - Advanced Development

DB45

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
ATCOM, St. Louis,	MIPR				1411	219	1300	300	Cont	3230
MO/AMCOM, Huntsville, AL										
AFDD, Moffett Field, CA	MIPR	Nov 1993			1588	0	5	5	Cont	1598
USAAARL, Ft. Rucker, AL	MIPR	May 1995			780	100	5	5	Cont	890
AATD, Ft. Eustis, VA	MIPR				640	100	5	5	Cont	750
Natick R&D Center, Natick, MA	MIPR				445	70	5	5	Cont	525
Test and Evaluation Organizations TECOM/ATTC, Ft. Rucker, AL SBIR/STTR					278	500	485	80	Cont	1343
							223			223
Government Furnished Property: Not Applicable										
Subtotal Product Development Organizations					7602	5348	5942	1812	Cont	Cont
Subtotal Support and Management Organizations					6257	817	2600	580	Cont	Cont
Subtotal Test and Evaluation Organizations					278	500	708	80	Cont	Cont
Total Project					14137	6665	9250	2472	Cont	Cont

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development									
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		7100	6574	17478	8886	11191	15752	15745	Continuing	Continuing	
DG10	Advanced Tactical Power Sources	129	131	179	200	220	487	487	Continuing	Continuing	
DG11	Advanced Electrical Energy Concepts Advanced Development	214	207	1377	1032	755	628	1096	Continuing	Continuing	
DG14	Logistics Support Equipment Advanced Development	83	94	99	106	102	105	103	Continuing	Continuing	
DK39	General Support Equipment Advanced Development	787	1637	1777	2001	2137	2472	2490	Continuing	Continuing	
DK41	Petroleum, Oil and Lubricant (POL) Distribution Equipment Advanced Development	850	832	829	909	907	963	970	Continuing	Continuing	
D266	Airdrop Equipment Advanced Development	1311	1317	1359	1351	1527	4961	5147	Continuing	Continuing	
D428	Rigidwall Shelter Advanced Development	3726	2356	875	993	1529	2009	2025	Continuing	Continuing	
D526	Marine Orientation Log Equipment Advanced Development	0	0	10983	2294	4014	4127	3427	Continuing	Continuing	
<p>Mission Description and Budget Item Justification: This program supports advanced development of new and improved technologies for combat support and combat service support equipment essential to sustaining combat operations. Advancements in airdrop, rigid wall shelters, marine craft, bridging, electric power generators and batteries, potable water, environmental control and petroleum equipment are necessary to improve safety and increase the tactical mobility, operational capability, lethality and survivability on the digital battlefield of the first to fight; and to provide for greater sustainment of all combat forces while reducing the logistics support burden. The projects in this Program Element focus on efforts to demonstrate general military utility, to include demonstration and validation and are therefore correctly placed in Budget Activity 4.</p>											

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998																										
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT																										
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development		DG10																										
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
DG10	Advanced Tactical Power Sources	129	131	179	200	220	487	487	Continuing	Continuing																				
<p>A. Mission Description and Justification This program develops advanced tactical power sources to improve soldier mobility, sustainability, and survivability. This is the only project that bridges the gap between science and technology and full scale production of new higher energy density, lower cost, all-weather batteries/energy conversion systems to satisfy the unique tactical and logistical requirements of portable electronic battlefield equipment. This effort also includes state-of-art measuring and indicating circuitry as well as safety protection circuitry. Superior battery charging and analyzing equipment required to meet unique requirements are also included.</p> <p>Acquisition Strategy: Transition to production</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 37 Conducted field test and evaluation of next generation of primary lithium-based batteries. 50 Began development of high power battery chemistry with no toxic/hazardous materials. 42 Developed High Energy/High Power throw away battery for Force XXI Soldier. <p>Total 129</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 104 Develop cost effective, lightweight Lithium Ion rechargeable polymer battery for Force XXI Soldier and standard Army configurations.. 27 Test and evaluate proof of principle prototype polymer batteries. <p>Total 131</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 139 Design and develop conformal battery packaging for Standard Family of Rechargeable Lithium Batteries. 40 Conduct field tests and prepare specifications for thin, conformal rechargeable battery family. <p>Total 179</p> <p>B. Project Change Summary</p> <p>FY 1998/FY 1999 President's Budget</p> <table border="0"> <tr> <td>Appropriated Value</td> <td>FY1997</td> <td>FY1998</td> <td>FY1999</td> </tr> <tr> <td></td> <td>129</td> <td>135</td> <td>172</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>129</td> <td>135</td> <td></td> </tr> <tr> <td></td> <td></td> <td>-4</td> <td></td> </tr> <tr> <td>FY 1999 Pres Bud Request</td> <td>129</td> <td>131</td> <td>179</td> </tr> </table>											Appropriated Value	FY1997	FY1998	FY1999		129	135	172	Adjustments to Appropriated Value	129	135				-4		FY 1999 Pres Bud Request	129	131	179
Appropriated Value	FY1997	FY1998	FY1999																											
	129	135	172																											
Adjustments to Appropriated Value	129	135																												
		-4																												
FY 1999 Pres Bud Request	129	131	179																											

Project DG10

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development DG10C. Other Program Funding Summary: NoneD. Schedule Profile

	FY 1997	FY 1998	FY 1999
1	2	2	2
2	3	3	3
3	X*	4	4
4		1	4

Developed Rechargeable Battery &
Recharger for SINGGARSDeveloped charging station for vehicular
Batteries X*Fielded test and evaluation of next
Generation lithium batteries X*Developed High Energy/High Power
battery for Force XXI Soldier X*Develop High Energy Lithium Ion
Polymer rechargeable battery XTest and evaluate prototype polymer
battery XDevelop conformal battery configurations
Conduct field tests on thin, conformal
Batteries X

*Milestones Completed

Project DG10

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
4 - Demonstration and Validation	0603804A Logistics and Engineering Equipment - Advanced Development	February 1998	DG10
A. Project Cost Breakdown			
Hardware Development	FY 1997	FY 1998	FY 1999
Test and Evaluation	99	104	139
Total	30	27	40
	129	131	179
B. Budget Acquisition History and Planning Information: Not Applicable			

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PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

DG11

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG11 Advanced Electrical Energy Concepts Advanced Development	214	207	1377	1032	755	628	1096	Continuing	Continuing

A. Mission Description and Budget Item Justification: Provides advanced development for electrical energy devices to improve soldier mobility, readiness and survivability. This project supports initiatives which will lead to tactical electric power procurements in diesel powered generators and power units/power plants rated at 3-200 kilowatts (kW) with higher efficiency, lighter weight, easier maintainability and higher reliability.

Acquisition Strategy: Complete advanced development and transition to engineering development.

FY 1997 Accomplishments:

- 214 Evaluated digital display controls and diagnostics over the family of generator sets.
- Total 214

FY 1998 Planned Program:

- 203 Initiate evaluation of lightweight designs for 5kW, 10kW and 15kW generator sets.
- 4 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 207

FY 1999 Planned Program:

- 712 Complete evaluation of lightweight designs for 5kW, 10kW and 15kW generator sets.
- 665 Complete evaluation of permanent magnet generators and associated electronics.
- Total 1377

B. Project Change Summary

FY 1998/FY 1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
213	214	1371
209	214	
+5	-7	
214	207	1377

Project DG11

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PE NUMBER AND TITLE

0603804A Logistics and Engineering Equipment - DG11

PROJECT

DG11

Total	To
<u>Cost</u>	<u>Compl</u>
Cont	Cont
	Cont

FY 1999

FY 1999

FY 1999

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

DG11

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Hardware Development	90	40	1012
Test and Evaluation	78	118	65
Government Engineering & Support	25	25	200
Government Program Support	21	20	100
Small Business Innovative Research/Small Business Technology Transfer Programs		4	
Total	214	207	1377

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
CECOM	In-House		200	200		214	203	1159	Cont	1576
Support and Management Organizations										
Test and Evaluation Organizations										
CECOM	In-House	Various						218	Cont	218
SBIR/STTR							4			4

Government Furnished Property: None

Subtotal Product Development	214	203	1159		1576
Subtotal Support and Management					
Subtotal Test and Evaluation	214	4	218		222
Total Project	214	207	1377		1798

Project DG11

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																								
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT																						
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development			DG14																						
COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																		
DG14 Logistics Support Equipment Advanced Development	83	94	99	106	102	105	103	Continuing	Continuing																		
<p>A. Mission Description and Justification: This program supports advanced development of new and improved technologies for logistics support equipment such as materiel handling equipment (MHE).</p> <p>Acquisition Strategy: Develop engineering prototype and award competitive contract for production or select non-developmental item (NDI) equipment based on market investigation and requests for proposals (RFPs) from industry.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 42 Conducted technical testing of Visibility Improvements for Forklift Carriages (VIC) prototypes. 41 Initiated materiel change management documentation for VIC. <p>Total 83</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 40 Conduct market survey for Lightweight Container Handlers. 52 Complete materiel change management documentation for VIC. 2 Small Business Innovative Research/Small Business Technology Transfer Programs <p>Total 94</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 99 Initiate preparation of acquisition package for Lightweight Container Handlers. <p>Total 99</p> <p>B. Project Change Summary</p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>86</td> <td>98</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>84</td> <td>96</td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>-1</td> <td>-2</td> </tr> <tr> <td></td> <td>83</td> <td>94</td> </tr> <tr> <td></td> <td></td> <td>99</td> </tr> </table>										FY 1998/1999 President's Budget	FY 1998	FY 1999	Appropriated Value	86	98	Adjustments to Appropriated Value	84	96	FY 1999 President's Budget	-1	-2		83	94			99
FY 1998/1999 President's Budget	FY 1998	FY 1999																									
Appropriated Value	86	98																									
Adjustments to Appropriated Value	84	96																									
FY 1999 President's Budget	-1	-2																									
	83	94																									
		99																									

Project DG14

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PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

DG14

C. Other Program Funding Summary

RDTE, 0604804.DH14, Logistics Support
Equipment
OPA 3, M41200, Truck Fork Lift, DE, PT, RT
OPA 3, ML5365, Items Less Than \$2.0M (MHE)
OPA 3, M41800, All Terrain Lifting Articulated
System
OPA 3, X00900, RTCC
OPA 3, M413 4K RTFLT

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
	84	4680	93	96	92	92	87		
			20588	34823	48550	58324	58255		Cont
	1999	1683	1672	1799	1778	1907	2846		Cont
	16519	3471	15228	10311	15459	11568	46911		Cont
			13615	11212	8625	129	153		Cont
							944		Cont

D. Schedule Profile

1
FY 1997
2 3
X*

FY 1998
FY 1999
FY 1999

Contracted for Visibility Improvements for
Forklift Carriages (VIC)
Completed testing of VIC prototypes
Initiated materiel change management
Documentation for VIC
Completed materiel change management
Documentation for VIC
Initiate acquisition package for
Lightweight Container Handlers
*Milestone completed

X*

X*

X

Project DG14

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE		PROJECT			
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development		February 1998		DG14			
<u>A. Project Cost Breakdown</u>									
Government Engineering and Support									
Government Program Support									
Small Business Innovative Research/Small Business Technology Transfer Programs									
Total									
<u>B. Budget Acquisition History and Planning Information</u>									
<u>Performing Organizations</u>									
Contractor or	Contract								
Government	Method/Type	Award or	Performing						
Performing	or Funding	Obligation	Activity						
Activity	Vehicle	Date	EAC						
<u>Product Development Organizations</u>									
TACOM	In-House								
<u>Support and Management Organizations</u>									
Contractor - TBD									
<u>Test and Evaluation Organizations</u>									
TARDEC	In-House	Various							
TECOM									
SBIR/STTR									
<u>Government Furnished Property: None</u>									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									
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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development DK39

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DK39 General Support Equipment Advanced Development	787	1637	1777	2001	2137	2472	2490	Continuing	Continuing

A. Mission Description and Justification: Develop and demonstrate the potential of prototype equipment to satisfy water purification, maintenance and environmental control requirements.

Acquisition Strategy: Transition to development of engineering prototypes or select Non-Developmental Item based on market survey and proposals from industry.

FY 1997 Accomplishments:

- 154 Selected components and completed initial Environmental Control Unit (ECU) design.
- 450 Released Engineering and Manufacturing Development request for proposal for the Lightweight Water Purifier (LWP).
- 183 Conducted Milestone 0/II In Process Review (IPR) for the LWP.
- Total 787

FY 1998 Planned Program:

- 464 Investigate commercial technology applicable to 18K British Thermal Units per Hour (BTUH) ECU and large diesel heaters (250+BTUH).
- 150 Award EMD contract for prototype LWPs.
- 600 Design and fabricate prototype LWPs.
- 273 Initiate Production Qualification Testing (PQT) and Early User Testing (EUT) for the LWP.
- 15 Evaluate the FORSCOM Packaged Water System (PWS).
- 94 Conduct abbreviated market survey of water packaging machines.
- 41 Small Business Innovative Research/Small Business Technology Transfer.
- Total 1637

FY 1999 Planned Program:

- 400 Fabricate 18K BTUH ECU prototypes.
- 194 Investigate commercial technology applicable to Small Diesel Heaters (60K-100K BTUH).
- 500 Complete the LWP PQT/EUT.
- 150 Conduct Milestone (MS) III (Type Classification Generic) IPR for the LWP.

Project DK39

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Advanced Development

DK39

FY 1999 Planned Program: (continued)

- 150 Prepare LWP Production Contract Package.
- 150 Prepare PWS program documentation.
- 83 Conduct MS I/III (TC Generic) for the PWS.
- 150 Prepare PWS contract solicitation.
- Total 1777

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value 851
Adjustment to Appropriated Value 830
FY 1999 Pres Bud Request -43 1777

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
RDTE, 0604804.DL39, General Support Equipment Engineering Development	1599	2215	2511	2177	2126	4683	4241		
OPA 3, ML5335, Items Less Than \$2.0M (Water Equipment)	2968	2795	1255	1938	1775	1021	775		
OPA3, MF9300, Air Conditioners, Various Sizes	1461	1433	4650	4498	4588	1382	7064		

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
1	2	3	4	1	2	3	4

Selected components and complete initial
9K ECU system design.
Released EMD request for proposal for the
LWP.

Conducted MS O/I/II LWP IPR
Investigated 18K ECU and large heater
technology
Develop 18K ECU prototypes

X

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0603804A Logistics and Engineering Equipment - DK39
Advanced DevelopmentD. Schedule Profile

FY 1997

FY 1998

FY 1999

Conducted abbreviated market survey of water packaging machines.

Award EMD Contract for prototype LWP's.

Design and fabricate prototype LWP's.

Evaluate the FORSCOM Packaged Water System (PWS).

Investigate small diesel heater technology

Initiate PQT and Early User Testing for the LWP.

Prepare PWS program documentation.

Complete the LWP PQT/EUT.

Prepare LWP Production Contract Package.

Conduct MS I/III (TC Generic) for the PWS.

Prepare PWS contract solicitation.

*Milestone completed

X*

X

X

X

X

X

X

X

X

X

X

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment - DK39

PROJECT

DK39

<u>A. Project Cost Breakdown</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Hardware Development	400	730	756
Program Management Support	60	60	60
Test and Evaluation	132	321	550
Government Engineering and Support	145	383	261
Integrated Logistics Support	50	143	150
Total	787	1637	1777

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations:										
TARDEC	In-House	Various			504	100	100	100	Cont	804
Contractors	CPFF	Mar 97			118	250	600	500	Cont	1468
ARL	MIPR	Various			15	13	15	15	Cont	58
CECOM/NSWC	MIPR	Various			290	238	526	329	Cont	1383
Support and Management Organizations:										
TARDEC	MIPR	Various			590	166	266	533	Cont	1555
Test and Evaluation Organizations:										
TECOM	MIPR	Various			25	20	130	300	Cont	475
Government Furnished Property: None										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project										

Government Furnished Property: None

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BUDGET ACTIVITY		DATE								
RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		February 1998								
PROJECT		PROJECT								
4 - Demonstration and Validation		DK41								
PE NUMBER AND TITLE		0603804A Logistics and Engineering Equipment - Advanced Development								
	COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DK41 Petroleum, Oil and Lubricant (POL) Distribution Equipment Advanced Development		850	832	829	909	907	963	970	Continuing	Continuing
<p>A. Mission Description and Justification: Develop and demonstrate the potential of prototype equipment to satisfy petroleum distribution requirements.</p> <p>Acquisition Strategy: Develop engineering prototypes or select Non-Developmental Item based on market surveys and proposals from industry.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 50 Updated Petroleum Quality Assurance Surveillance (PQAS) program management documentation for Milestone II IPR. 62 Prepared solicitation package for PQAS Engineering and Manufacturing Development (EMD) phase. 738 Completed fabrication and development testing PQAS technology demonstration model (TDM). <p>Total 850</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 35 Coordinate PQAS program management documentation and conduct Milestone II/III IPR. 170 Demonstrate feasibility of portable PQAS modules for use in forward areas. 95 Prepare Petroleum Quality Surveillance Laboratory (PQSL) program management documentation for Milestone I/II IPR. 378 Award contract for ultralight 350 gallons per minute (GPM) pump assembly prototype. 135 Prepare contract package for PQSL technology demonstration model. 19 Small Business Innovative Research/Small Business Technology Transfer. <p>Total 832</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 579 Complete fabrication and testing of 350GPM ultra lightweight pump. 250 Award PQSL contract for design, fabrication, and test. <p>Total 829</p>										

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4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development**B. Project Change Summary**

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 Pres Bud Request

FY 1997

872

852

-2

850

FY 1998

859

859

-27

832

FY 1999

824

C. Other Program Funding SummaryRDTE, 0604804.DL41, Fuels and Equipment
Engineering DevelopmentOPA3, ML5335, Items Less Than \$2 million
(POL)

OPA3, M90800, Hose/line Outfit Fuel Handling

FY 1997

941

6467

0

FY 1998

1038

7055

0

FY 1999

1086

4657

0

FY 2000

1069

3754

0

FY 2001

1068

3798

0

FY 2002

1332

4673

0

FY 2003

1346

4394

0

To

Compl

Cont

Total

Cost

Cont

Cont

Cont

Cont

Cont

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PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment - DK41

Advanced Development

D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
Prepared performance requirements for PQAS production phase.			X*						
Updated PQAS Program Management Documents (PMD) for MS II IPR.			X*						
Completed fabrication and testing of PQAS technology demonstration model.				X*					
Award contract for ultralight 350 GPM pump assembly model.					X				
Demonstrate feasibility of portable PQAS modules for use in forward areas.						X			
Conduct PQAS MS II/III IPR and coordinate PMD.							X		
Prepare contract package for PQSL TDM.								X	
Prepare PMD for PQSL and conduct MS I/II IPR.						X			
Continue development of ultralight 350 GPM pump.								X	
Award contract for design fabrication and test of PQSL TDM									
*Milestone completed									

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4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

DK41

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Hardware Development	610	443	516
Test and Evaluation	120	63	87
Government Engineering and Support	85	276	176
Government Program Support	35	50	50
Total	850	832	829

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations:										
TARDEC	In-House	Various			688	185	246	289	Cont	1408
ETG	CPFF	Sep 95			1404	520	151		Cont	2075
Contractor	CPFF	Feb 98					370	290	Cont	660
Contractor	CPFF	Various						140	Cont	140
Support and Management Organizations:										
TACOM	In-House	Various			72				Cont	72
CECOM	MIPR	Mar 96			80	10			Cont	90
ARL	MIPR	Various			67	15	15	10	Cont	107
Test and Evaluation Organizations:										
TECOM	MIPR	Mar 97				120	50	100	Cont	270
Government Furnished Property: None										
Subtotal Product Development					2092	705	767	719		4283
Subtotal Support and Management					219	25	15	10		269
Subtotal Test and Evaluation					2311	120	50	100		270
Total Project						850	832	829		4822

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PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development D266

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D266 Airdrop Equipment Advanced Development	1311	1317	1359	1351	1527	4961	5147	Continuing	Continuing

A. Mission Description and Justification: Conduct demonstration and validation of aerial delivery systems for equipment and personnel, with emphasis on reduced incidence of injuries, improved safety and accuracy, and increased survivability of aircraft, equipment, and personnel.

Acquisition Strategy: Rapid development through the acquisition lifecycle, capitalizing on all opportunities to accelerate development, production and fielding.

FY 1997 Accomplishments:

- 1003 Awarded contract for component development and performance validation of Advanced Tactical Parachute System (ATPS).
- 308 Conducted concept testing for Enhanced Container Delivery System (ECDS).
- Total 1311

FY 1998 Planned Program:

- 432 Execute ATPS component development and performance validation contract.
- 852 Initiate Extraction Parachute Jettison Device (EPJD) effort; market survey, component development, initial developmental testing. Enhances safety for US Air Force aircraft and aircrew. Eliminates intentional jettison of US Army equipment loads under emergency/malfunction situations.
- 33 Small Business Innovative Research/Small Business Technology Transfer Programs.
- Total 1317

FY 1999 Planned Program:

- 769 Initiate and conduct developmental testing of ATPS.
- 590 Conduct developmental testing of EPJD, obtain tri-service certification of load extraction system and begin operational testing.
- Total 1359

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
1414	1359	1353
1379	1359	
-68	-42	
1311	1317	1359

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4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

D266

C. Other Program Funding Summary

RDTE, 0604804.D279 Airdrop Equipment
Engineering Development
OPA 3, R10904, Advanced Tactical Parachute
System

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
	1326	1317	1361	1395	1393	4961	5738		
						25950			52765

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
1	2	3	4	1	4	2	3	4	
			X*						

Awarded ATPS Contract
Award EPJD Contract
ATPS Component Development and
Performance Validation
EPJD Component Development and
Performance Validation
EPJD Developmental Testing

* Milestones Completed

X

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

D266

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	901	912	936
Test and Evaluation	335	340	356
Government Support and Management	75	65	67
Total	1311	1317	1359

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SSCOM	In-House				24305	458	263	287	Cont	25313
QMSCH/OGA	MIPR			18		443	649	649	Cont	1759
Support and Management Organizations										
SSCOM					718	75	65	67	Cont	925
Test and Evaluation Organizations										
TECOM/OGA					2238	300	290	300	Cont	3128
SSCOM					245	35	50	56	Cont	386

Government Furnished Property: None

Subtotal Product Development	24323	901	912	936	27072
Subtotal Support and Management	718	75	65	67	925
Subtotal Test and Evaluation	2483	335	340	356	3514
Total Project	27524	1311	1317	1359	31511

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BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT		
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development								D428		
		COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D428 Rigidwall Shelter Advanced Development				3726	2356	875	993	1529	2009	2025	Continuing	Continuing
<p>A. Mission Description and Justification: Develop a family of tactical rigid wall shelters which enhances soldier survivability and sustainability of command, control, communications and intelligence. Shelters provide highly mobile, joint service platforms for the digitization of the battlefield, housing many critical vehicle-mounted battlefield systems, medical critical care in a Chemical/Biological (C/B) environment and high tech maintenance.</p> <p>Acquisition Strategy: Product development and testing up to Engineering and Manufacturing Development.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 846 Completed development of Cargo Bed Cover (CBC) variant for M105 cargo trailer, awarded design/fabrication contract for prototype 5 Ton Truck M923 CBC variant, and completed redesign and initiated testing for 2½ M35 truck variant. 1395 Awarded contracts to develop lightweight, low-cost signature management techniques to the HMMWV-mounted Standard Integrated Command Post Shelter (SICPS) to avoid visual, thermal, radar and IR detection. 1485 Awarded contracts for a vulnerability assessment and for fabrication of a survivable SICPS shelter that provides ballistic protection, protection from directed energy and fuel air weapons and enhanced NBC protection. <p>Total 3726</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 1462 Award contract for the design and fabrication of the Survivable SICPS. 835 Complete Milestone I/II for CBC HMMWV variant and award developmental contract with options, complete testing and development for 2½ ton truck CBC variant, and initiate design/fabrication for 5 Ton Truck CBC variant. 59 Small Business Innovative Research/Small Business Technology Transfer Programs. <p>Total 2356</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 875 Complete Milestone I/II for 2½ ton CBC variant and award developmental contract with options, and complete prototype design/fabrication and conduct testing for 5 ton Truck CBC variant. <p>Total 875</p>												
Project D428		Page 22 of 28 Pages								Exhibit R-2 (PE 0603804A)		

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PE NUMBER AND TITLE

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment - D428

PROJECT

D428

B. Project Change Summary	FY 1997	FY 1998	FY 1999						
FY 1998/1999 President's Budget	3868	2431	870						
Appropriation Value	3774	2431							
Adjustments to Appropriated Value	-48	-75							
FY 1999 President's Budget	3726	2356	875						

C. Other Program Funding Summary	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604804.D429, Rigidwall Shelter Engineering Development	2046	955	0	0	0	0	0	Cont	Cont

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BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development						February 1998	D428
D. <u>Schedule Profile</u>									
		FY 1997				FY 1998		FY 1999	
		1	2	3	4	1	2	3	4
Completed design and initial Testing for 2½ Ton Truck CBC Variant				X*					
Completed Development of M105 CBC Variant					X*				
Awarded Design/Fabrication Contract for 5 Ton Truck CBC Variant									
Complete MS I/II for HMMWV CBC Variant						X			
Initiate Design/Fabrication of 5 Ton Truck CBC Variant					X				
Award LRIP Contract for HMMWV CBC Variant						X			
Complete Development and Testing of 2½ Ton Truck CBC Variant							X		
Complete MS I/II for 2½ Ton Truck CBC Variant.							X		
Award LRIP Contract for 2½ Ton Truck CBC Variant								X	
Complete Development and Testing of 5 Ton Truck CBC Variant									X
*Denotes completed milestone									

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -

D428

Advanced Development

	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown			
Primary Hardware Development	3126	421	275
Test and Evaluation	305	925	200
Program Management Support	295	1010	400
Total	3726	2356	875

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SSCOM	In-House				14424	360	421	275	Cont	15480
Plastics Research Corp.	Various				1413	2166			Cont	3579
Brunswick					666	600			Cont	1266
Ft. Belvoir	MIPR									
CASCOM										
Support and Management Organizations										
SSCOM					3739	295	1010	400	Cont	5444
Test and Evaluation Organizations										
TECOM	MIPR				7982	305	925	200	Cont	9412

Government Furnished Property: None

Subtotal Product Development	16503	3126	421	275	20325
Subtotal Support and Management	3739	295	1010	400	5444
Subtotal Test and Evaluation	7982	305	925	200	9412
Total Project	28224	3726	2356	875	35181

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BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment - D526

Advanced Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D526 Marine Orientation Log Equipment Advanced Development	0	0	10983	2294	4014	4127	3427	Continuing	Continuing

A. Mission Description and Justification: The most significant effort in FY 99 provides funds for the Army share of the Joint Lighterage and Causeway Program. This program, managed jointly with the Navy, will improve Cargo Offload speed under normal sea states and allow for successful offload under challenging sea state conditions. These efforts will significantly improve Field Command operational capability and flexibility. Funds will permit efforts to develop joint plans and materiel in conjunction with the Navy and Marines, truly integrating Logistics Over The Shore (LOTS) capabilities. Project funds will also serve to support conceptual development of the Rapidly Installed Breakwater (RIB). This project will also assist the Army to conduct LOTS exercises under adverse Sea State conditions. Together, these efforts will extend capabilities of the joint Army/Navy LOTS program, and allow the Army to proceed with deployment of forces under less than ideal sea and weather conditions.

Acquisition Strategy: RDTE followed by competitive procurement.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 1883 Conceptual Development of the Rapidly Installed Breakwater (RIB).
- 9100 Joint Program with Navy to develop Sea State 3 Capable Causeways/Lighterage.
- Total 10983

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustment to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
0	0	330
0	0	10983

Change Summary Explanation: Funding – FY 99 increased (+10653) due to high priority requirements.

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PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603804A Logistics and Engineering Equipment -
Advanced Development

D526

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost Cont
RDTE, 0604804A, D461, Marine Oriented Logistics, Engineering Development	13888	13744	2085	4467	1514	1260	2812	Cont	Cont
OPA 3, M32400, Floating Crane, 100-250 Ton	7599	6597	4269					Cont	Cont
OPA 3, M44500, Pusher Tug, Small								Cont	Cont
OPA 3, R09600, Causeway, Powered System			17083	8260	18639	4327	5553	Cont	Cont
OPA 3, R09800, RO/RO Discharge Platform				4818		4718	4626	Cont	Cont
OPA 3, R09900, Causeway, Floating				5028				Cont	Cont
OPA 3, M11200, Logistic Support Vessel (LSV)				18528		18875	18505	Cont	Cont
OPA 3, M11201, Logistic Support Vessel (ESP)					6229	7456	13414	Cont	Cont
OPA 3, M32500, Rapidly Installed Breakwater						4806	4786	Cont	Cont
OPA 3, M11300, Containerized Maintenance Facility			5300		958			Cont	Cont

D. Schedule Profile

	FY 1997	FY 1998	FY 1999
1	2	3	4
Rapidly Installed Breakwater Award		1	2
Joint Lighterage Awards			X
			X

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
4 - Demonstration and Validation		0603804A Logistics and Engineering Equipment - Advanced Development				D526
A. Project Cost Breakdown		FY 1997	FY 1998	FY 1999		
Government Engineering Support				1930		
Testing				140		
Contractor Engineering Support				7883		
Program Management Support				1030		
Total		0	0	10983		
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or	Method/Type	Award or	Performing	Project	Total	
Government	or Funding	Obligation	Activity	Office	Prior to	
Performing	Vehicle	Date	EAC	EAC	FY 1997	
Activity					FY 1998	
Product Development Organizations						
Miscellaneous	SS-FP					
NSWC/Other Govt	MIPR				447	
Support and Management Organizations						
NSWC	MIPR				318	
TACOM	MIPR				69	
Test and Evaluation Organizations						
NSWC	MIPR					
TACOM	MIPR					
Government Furnished Property: None						
Subtotal Product Development					447	10260
Subtotal Support and Management					387	1417
Subtotal Test and Evaluation						140
Total Project					834	11817
Project D526						
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Project D526

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603805A Combat Service Support Control
Systems Evaluation and Analysis

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	12479	7280	14353	8265	5975	5810	5944	Continuing	Continuing
D091 Combat Service Support Control System*	10612	5635	12558	6385	4082	3896	4013	16747	177318
D246 Tactical Communications System-Advanced Development	1867	1645	1795	1880	1893	1914	1931	Continuing	Continuing

*FY 97 R-1 exhibit contains an administrative error. Funding shown here is correct.

Mission Description and Budget Item Justification: Project D091: The Combat Service Support Control System, is a computer software system designed to assist the Combat Service Support (CSS) Commander and his staff to rapidly collect, store, analyze, and disseminate CSS information to support the functions of command, control and resource management. CSS control centers must provide a rapid decision support capability and supportive information to commanders more quickly than is possible with the present manual systems. This program develops the CSS battlefield functional area (BFA) node of the Army Tactical Command and Control System (ATCCS) which is a component of the Army Battle Command System (ABCS). Project D246, Tactical Communications System - Advanced Development, provides for insertion of proven communications technology from program element 0602782A, Project AH92 exploratory development into advanced development. Examples of these potential programs are the Multiband, Multimode Radio, high power solid state amplifiers and couplers, and packet appliques used to increase network efficiency. These efforts provide for the demonstration and validation of advanced technologies and are therefore appropriately funded in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603805A Combat Service Support Control Systems Evaluation and Analysis								D091	
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D091 Combat Service Support Control System*		10612	5635	12558	6385	4082	3896	4013	16747	177318	

A. Mission Description and Justification: Project D091, Combat Service Support Control System. The CSSCS is a computer software system designed to assist the CSS Commander and his staff to rapidly collect, store, analyze, and disseminate CSS information to support the functions of command, control and resource management. CSS control centers must provide a rapid decision support capability and supportive information to commanders more quickly than is possible with the present manual systems. This program develops the CSS BFA node of the ATCCS, which is a component of the ABCS.

Acquisition Strategy: Acquisition strategy is to pursue an evolutionary development process, with program development structured to evolve over five versions. Versions 1 and 2 served as proof of principle, and provided initial division level CSS functional capability on common hardware. Version 3 built on the capabilities of the previous versions and provides an Initial Operational Capability at Division and Corps level, to include initial horizontal interoperability with ABCS systems. Version 4 extends CSSCS to EAC, as well as provide added capabilities at Echelons Corps and Below (ECB). Version 5, the objective CSSCS software, will provide remaining ECB functionality, and extend CSSCS capabilities to joint, allied and coalition forces. TRW is the software development contractor. Lockheed Martin Corporation (LMC) provides training support. Hardware is procured from the Common Hardware/Software-2 (CHS-2) contract with GTE.

FY 1997 Accomplishments:

- 1000 Concluded IOTE-II
- 5542 Completed Version 3 software development
- 1537 Continued Version 4 Software development
- 1200 Prepared for and conducted Army Warfighting Experiments (AWE), Task Force XXI and Division XXI activities.
- 800 Prepared documentation and conducted ASARC III (Full Scale Production (FSP))
- 533 Began fielding of Version 3
- Total 10612

FY 1998 Planned Program:

- 3874 Complete Version 4 development
- 700 Conduct Version 4 Technical Test.
- 920 Prepare for and conduct Army Warfighting Experiments (AWE), Division XXI and Force XXI activities
- 141 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 5635

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603805A Combat Service Support Control

D091

Systems Evaluation and Analysis

FY 1999 Planned Program:

- 750 Conduct Version 5 PDR/CDR
- 1000 Conduct Version 5 Technical Test
- 8558 Complete Version 5 development
- 950 Begin FOT&E
- 1300 Prepare for and conduct Army Warfighting Experiments (AWE) and Force XXI activities
- Total 12558

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	10771	5914	5997
Appropriated Value	11119	5914	
Adjustments to Appropriated Value	-507	-279	
FY 1999 President's Budget	10612	5635	12558

Change Summary Explanation: Funding: FY 1999 (+6561) RDTE funding increased to provide software support.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Procurement, OPA 2 (W34600)	5778	5590	9332	20802	18867	16260	19979	38158	145290
Spares (BS9706)	810	293	183	173	171	181	181	231	2673

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
V3 IOTE-II	1	2	3	4	1	2	3
ASARC III (FSP)	X*						4
FUE V3							
V3 IOC			X				
V4 Technical Test							
Begin Fielding V4					X		
V5 PDR						X	
V5 CDR						X	
V5 Technical Test							X

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BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT
4 - Demonstration and Validation		0603805A Combat Service Support Control Systems Evaluation and Analysis										D091
<u>D. Schedule Profile</u>		FY 1997		FY 1998		FY 1999						
1	2	3	4	1	2	3	4	1	2	3	4	
											X	
V5 FOTE												
*Milestone Complete												

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603805A Combat Service Support Control
Systems Evaluation and Analysis

D091

A. Project Cost Breakdown

Software Development	FY 1997	FY 1998	FY 1999
	7471	4892	11417
Program Management Support	2861	527	585
COE/CHS/Common Support	0		300
Operational Test and Evaluation	280	75	256
SBIR/STTR		141	
Total	10612	5635	12558

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TRW	C/CPFF	JUL 87	15731	15731	15731	0	0	0	0	15731
TRW	C/CPAF	FEB 91	75397	75397	59147	6370	3943	5980	0	75440
Lockheed Martin	C/CPAF	DEC 94	TBD	TBD	2694	1101	949	1440	0	6184
COE/Common Spt	MIPR				5290	0	0	300	2000	7590
TBD					0	0	0	3997	25257	29254
Support and Management Organizations										
PM CSSCS			14110		14110	376	0	0	0	14486
CECOM	MIPR		1214		1214	210	176	0	0	1600
SDC-LEE	MIPR		401		401	149	0	0	0	550
SDC-HUACHUCA	MIPR		650		650	170	151	185	1520	2676
EER/VITRO/	MIPR		3673		3673	1381	0	0	0	5054
FEDSIM										
LMI			0		0	575	200	400	1609	2784
SBIR/STTR							141			141
Test and Evaluation Organizations										
GOVT	MIPR		2599		2599	105	0	111	618	3433
EPG/CAC	MIPR		583		583	175	75	145	1080	2058

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										
BUDGET ACTIVITY		PE NUMBER AND TITLE					DATE	PROJECT		
4 - Demonstration and Validation		0603805A Combat Service Support Control Systems Evaluation and Analysis					February 1998	D091		
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
OPTEC					1578	0	0	0	0	1578
Government Furnished Property										
Contract										
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property										
CHS-TRW/LMC MIPR										
Support and Management Property: None										
Test and Evaluation Property										
CHS-III CORPS MIPR										
					3601	0	0	0	2750	6351
					2408	0	0	0	0	2408
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project										
					86463	7471	4892	11717	30007	140550
					20048	2861	668	585	3129	27291
					7168	280	75	256	1698	9477
					113679	10612	5635	12558	34834	177318

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603805A Combat Service Support Control Systems Evaluation and Analysis								D246	
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D246	Tactical Communications System-Advanced Development	1867	1645	1795	1880	1893	1914	1931	Continuing	Continuing	
<p>A. Mission Description and Budget Item Justification This project will validate the new Tactical Internet capability required for Force XXI. It provides definition, integration and testing of a mix of mature and prototype products which will be used to develop a Tactical Internet capability. The Tactical Internet will be the primary data communications infrastructure at Corps and below for Force XXI and will revolve around interconnecting a mix of existing (e.g.: SINGGARS, SINGGARS SIP, EPLRS, MSE TPN, ETC) and emerging communications devices using gateways and routers. Gateways will also provide the link to Strategic levels. This capability will result in the tactical equivalent of the Information Highway and will support key battlefield functional areas to include logistics reporting, telemedicine, etc. The Tactical Internet will use and leverage commercial network standards and products. The "Internet Protocol" (IP) suite will be used to provide seamless communications with the capability to dynamically route data to hosts. It will be designed to facilitate technology insertion. The focus of this project will be to reduce the technical risk by assembling, integrating, and testing the Tactical Internet components prior to TF XXI, Division XXI, and Corps XXI. New services and components will be added and tested as required for each iteration leading up to Force XXI.</p> <p>Acquisition Strategy: Not applicable.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 431 Provided on-site tactical internet technical support at Ft Hood and Ft Irwin for TFXXI 582 Expanded the testbed to 35 nodes and installed the latest SINGGARS, EPLRS, Internet Controller, Applique software revisions for tactical internet testing 250 Developed and provided empirical test data for validation of the System Performance Model. Provided laboratory testing of EPLRS and NTDR for DIVXXI Demonstrated the transfer of countermeasure messages over the Tactical Internet; transferred Tactical Internet messages over SPITFIRE UHF satellite radios for range extension 104 Incorporate latest DBC/BITS products including HF radios 500 Expanded Tactical Internet efforts to begin examining the vulnerabilities (C2 Protect for Information Operations) inherent in commercial protocols and products. Identified protection techniques <p>Total 1867</p>											

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PROJECT																						
4 - Demonstration and Validation	0603805A Combat Service Support Control Systems Evaluation and Analysis																						
PE NUMBER AND TITLE																							
0603805A Combat Service Support Control Systems Evaluation and Analysis																							
<p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 335 Resolve technical issues identified during the TF XXI and DIV XXI Exercises 570 Insert latest products and expand the testbed to address requirements for Corps size networks 203 Develop and provide empirical test data for the Corps XXI Exercise 80 Incorporate latest DBC/BITS Products 416 Perform lab feasibility studies of candidate video equipment, procure state-of-the-art video equipment for demo in an airborne platform. Incorporate NTDR on an airborne platform to demo networking, high throughput and automatic relaying capabilities using new video equipment 41 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR) <p>Total 1645</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 468 Resolve technical issues identified during the Corps exercise 700 Optimize technical solutions for Force XXI fieldings 159 Incorporate final set of DBC/BITS products 468 Demonstrate advanced networking capabilities by incorporating the NTDR on an airborne platform <p>Total 1795</p> <p>B. Project Change Summary</p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>1918</td> <td>1759</td> <td>1786</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>2021</td> <td>1759</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>-154</td> <td>-114</td> <td></td> </tr> <tr> <td></td> <td>1867</td> <td>1645</td> <td>1795</td> </tr> </table> <p>C. Other Program Funding Summary: Not applicable</p> <p>D. Schedule Profile: Not applicable.</p>				FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	1918	1759	1786	Adjustments to Appropriated Value	2021	1759		FY 1999 President's Budget	-154	-114			1867	1645	1795
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																				
Appropriated Value	1918	1759	1786																				
Adjustments to Appropriated Value	2021	1759																					
FY 1999 President's Budget	-154	-114																					
	1867	1645	1795																				

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
4 - Demonstration and Validation	0603805A Combat Service Support Control Systems Evaluation and Analysis		D246
A. Project Cost Breakdown			
CECOM RDEC Internal Technical Support	FY 1997	FY 1998	FY 1999
Contractor Technical Support	1168	914	1083
Travel & Misc (Routers, Cables, Connectors)	570	554	584
SBIR/STTR	129	136	128
Total	1867	1645	1795
B. Budget Acquisition History and Planning Information: Not applicable			
Project D246		Exhibit R-3 (PE 0603805A)	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603807A Medical Systems - Advanced Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	9730	6555	11414	11073	11041	12546	12083	Continuing	Continuing
D808 DoD Drug and Vaccine-Advanced Development	3650	2134	3714	3727	3711	4127	4146	Continuing	Continuing
D811 Military HIV Vaccine and Drug-Advanced Development	2517	0	3259	2543	2519	2500	2417	Continuing	Continuing
D836 Combat Medical Materiel-Advanced Development	2768	3608	3634	3793	3826	4076	3890	Continuing	Continuing
D837 Soldier System Protection-Advanced Development	795	813	807	1010	985	1843	1630	Continuing	Continuing

Mission Description and Budget Item Justification: This program element (PE) funds the Advanced Development (AD) of medical materiel necessary to field an effective capability for infectious diseases. The PE funds AD of systems for medical protection against naturally occurring diseases and Human Immunodeficiency Virus (HIV). This includes development and initial human testing of vaccines, prophylactic and therapeutic drugs. Additionally, the PE supports AD of field medical equipment and drugs essential for combat casualty care on all battlefields and military operations other than war while reducing logistical support requirements. The PE also funds AD of systems that provide enhancement of or protection against physiological and psychological factors affecting cognitive and physical performance imposed by military systems, combat operations or the environment. This includes AD of vision corrective devices. Systems include resuscitators, blood substitutes, advanced sensors and diagnostic algorithms, field x-ray, field production of medical grade oxygen, intensive care delivery platforms and litters, and Advanced Surgical Suites for Trauma Care (ASSTC). This program is primarily managed by the U.S. Army Medical Research and Materiel Command. This PE focuses on efforts to demonstrate general military utility to include demonstration and validation in the area of medical materiel and is properly placed in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
4 - Demonstration and Validation		0603807A Medical Systems - Advanced Development		D808					
COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D808 DoD Drug and Vaccine-Advanced Development	3650	2134	3714	3727	3711	4127	4146	Continuing	Continuing

A. Mission Description and Justification: This project funds program definition and risk reduction of candidate medical countermeasures such as vaccines and drugs through safety, immunogenicity, and small-scale efficacy testing in volunteers against naturally occurring infectious diseases of mission-aborting potential. Work performed in laboratories and among troop populations is directed to prevention, diagnosis and treatment of viral, bacterial and parasitic disease to prevent casualties, sustain operational performance and minimize deaths and disability of armed forces during military operations. Some major contractors are Southern Research Institute, Birmingham AL; South Florida Research Institute, Miami, FL; Institute of Biology for the Army, Rio de Janeiro, Brazil; and Kenya Medical Research Institute, Nairobi, Kenya.

Acquisition Strategy: Test and evaluate in-house and commercially developed products in extensive government-managed clinical trials to gather data required for Food and Drug Administration licensure.

FY 1997 Accomplishments:

- 2052 Completed expanded trials to evaluate safety and/or efficacy of antimalarial drugs WR238605 and Halofantrine.
- 172 Completed Phase I safety trials on the Leishmania Skin Test Antigen.
- 204 Began Phase II trials on Leishmaniasis Topical Treatment.
- 1222 Completed Phase I/IIa safety/efficacy trials for RTS,S malaria vaccine.
- Total 3650

FY 1998 Planned Program:

- 658 Begin expanded Phase IIb field trials with RTS,S malaria vaccine.
- 113 Complete Phase II trials on Leishmaniasis Topical Treatment.
- 128 Begin Phase II study on Leishmania Skin Test Antigen.
- 306 Begin Phase I/II studies for *Shigella flexneri* vaccine.
- 876 Complete Phase II efficacy studies for antimalarial drug WR238605.
- 53 Small Business Innovative Research/Small Business Technology Transfer Programs.
- Total 2134

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603807A Medical Systems - Advanced

D808

Development

FY 1999 Planned Program:

- 530 Initiate Phase I safety trials for a vaccine to protect against hemorrhagic fever with renal failure syndrome.
- 605 Complete Phase IIb field trials with RTS,S malaria vaccine.
- 165 Complete Phase I safety and immunogenicity trials for *Shigella sonnei* vaccine.
- 100 Complete Phase II efficacy study for Leishmania Skin Test Antigen.
- 250 Begin efficacy studies for antimalarial drug Desbutyl Halofantrine.
- 500 Begin Phase II studies for a Dengue Tetravalent vaccine.
- 200 Begin testing of a diagnostic kit for *Plasmodium falciparum* malaria.
- 864 Begin clinical studies for malaria vaccine, reduced immunization schedule.
- 250 Begin testing of insect repellent camouflaged face paint.
- 250 Begin testing of artelinic acid for the treatment of malaria.
- Total 3714

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997

3754

3754

-104

3650

FY 1998

2202

2202

-68

2134

FY 1999

3696

3714

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.

	FY 1997			FY 1998			FY 1999	
	1	2	3	4	1	2	3	4
<i>Campylobacter</i> MLST 2 IPR								
Hantaan MLST Special IPR								
<i>Shigella flexneri</i> 602 MLST 1			X*					
<i>Shigella flexneri</i> 602 MLST 2			X*					
<i>Shigella sonnei</i> MLST 1				X				
Antimalarial Drug WR238605 MLST 2							X	
Antileishmanial Drug WR6026 MLST 2							X	
Halofantrine Special IPR							X	

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603807A Medical Systems - Advanced

D808

Development

A. Project Cost Breakdown

Test & Evaluation	FY 1997	FY 1998	FY 1999
	2952	1543	3307
Product Development	225	0	0
Project Management	473	591	407
Total	3650	2134	3714

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--------------------------	---	--------------------------	---------------------	-----	--------------------	------------------------	---------	---------	---------	--------------------	---------------

Product Development Organizations

Contracts											
Salk Institute	CPFF	APR 1988		50556	50556	43536	225	0	0	Cont	43761
Support and Management Organizations											
USAMMDA						313	271	399	227	Cont	1210
Contracts						170	202	192	180	Cont	744
Test and Evaluation Organizations											
Walter Reed Army						1890	1277	1017	1259	Cont	5443
Inst of Research						341	73	0	0	Cont	414
Army Laboratories						455	257	350	887	Cont	1949
Navy Laboratories						299	1345	176	1161	Cont	2981
Contracts											

Government Furnished Property: None

Subtotal Product Development	43536	225	0	0		43761
Subtotal Support and Management	483	473	591	407		1954
Subtotal Test and Evaluation	2985	2952	1543	3307		10787
Total Project	47004	3650	2134	3714		56502

Project D808

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603807A Medical Systems - Advanced Development

PROJECT

D811

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D811 Military HIV Vaccine and Drug-Advanced Development	2517	0	3259	2543	2519	2500	2417	Continuing	Continuing

A. Mission Description and Justification: This project funds Congressionally-mandated, militarily relevant Human Immunodeficiency Virus (HIV) research for demonstration and validation of candidate vaccines and drugs through safety, immunogenicity and small-scale efficacy testing and behavioral intervention in volunteers. Efforts are directed to answer militarily unique needs affecting manning, mobilization and deployment.

Acquisition Strategy: Test and evaluate commercially developed vaccine candidates in government managed trials.

FY 1997 Accomplishments:

- 2517 Transition to Engineering and Manufacturing Development a vaccine for the prevention of HIV-1.
- Total 2517

FY 1998 Planned Program: Program not funded in FY 1998**FY 1999 Planned Program:**

- 3259 Evaluate vaccines for prevention of HIV to meet Food and Drug Administration data requirements to prove safety and efficacy.
- Total 3259

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2581	0	517
Appropriated Value	2581		
Adjustments to Appropriated Value	-64		
FY 1999 President's Budget	2517	0	3259

Change Summary Explanation: Funding: FY 1999: Funding increased to allow further product development.

C. Other Program Funding Summary: Not applicable.**D. Schedule Profile:** Multiple medical developmental products will advance through various events throughout the FY.

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603807A Medical Systems - Advanced

D811

Development

A. Project Cost Breakdown

Test & Evaluation	FY 1997	FY 1998	FY 1999
	2517	0	3259
Product Development	0	0	0
Project Management	0	0	0
Total	2517	0	3259

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--	---	--------------------------	-------------------------	--------------------	------------------------	---------	---------	---------	--------------------	---------------

Product Development Organizations: None

Support and Management Organizations: None

Test and Evaluation Organizations

Army Laboratories

Contracts

					2532	0	0	0	0	0
						2517	0	3259	Cont	8308

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

					2532	0	0	0	0	0
						2517	0	3259	Cont	8308

Project D811

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
4 - Demonstration and Validation		0603807A Medical Systems - Advanced Development		D836					
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D836 Combat Medical Materiel-Advanced Development	2768	3608	3634	3793	3826	4076	3890	Continuing	Continuing
<p>A. Mission Description and Justification: The project supports Advanced Development of new and improved systems essential for battlefield casualty care, patient transport and evacuation, and return to duty in support of special contingency and conventional force operations. Primary civilian contractors are University of Illinois, Chicago, IL and United Defense Limited Partnership, San Jose, CA.</p> <p>Acquisition Strategy: Evaluate commercially developed materiel in government-managed tests for hardening or other modification.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 32 Defined Army requirements for life support for trauma and transport. 117 Transitioned medical/dental imaging system to procurement. 611 Modified U.S. and allied military and commercial medical equipment used for patient examination, diagnosis and treatment in the field; incorporated technological advances into field medical equipment, i.e., the Buchwald retractor, field triage light, and infantry cart. 202 Demonstrated and validated off-the-shelf technologies to develop telemedicine hardware and concepts for the treatment of combat casualties. 1806 Reconfigured the first prototype of the Armored Medical Evacuation Vehicle (AMEV) from evacuation to treatment. Participated in the Task Force XXI Advanced Warfighting Experiment. <p>Total 2768</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 1152 Complete an Analysis of Alternatives (AOA) for AMEV, build a mock-up, and demonstrate at Army Medical Evacuation Conference. 14 Standardize and transition field triage light to USAMMA. 31 Complete the Operational Requirements Document, AOA, and market investigation for the Life Support for Trauma and Transportation System (LSTAT). 125 Complete airworthiness certification testing for LSTAT and submit data to the Food and Drug Administration (FDA). 200 Conduct technical testing of thawed blood processing system and submit packet to FDA for 510K approval. 105 Make U.S. Army Medical Research Institute for Infectious Diseases modifications to LSTAT. 1396 Build Special Operations Resuscitation Surgical Suite (SORSS) prototype for demonstration and testing. 74 Coordinate technology demonstrations to the U.S. Army Medical Department Center and School. 115 Purchase ceramic oxygen prototype for evaluation on medical platforms. 									

Project D836

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603807A Medical Systems - Advanced Development

D836

FY 1998 Planned Program: (continued)

- 306 Conduct human safety and efficacy studies of a fibrin bandage for treatment of combat casualties.
- 90 Small Business Innovative Research/Small Business Technology Transfer Programs.
- Total 3608

FY 1999 Planned Program:

- 1357 Conduct human safety and expand efficacy studies of a fibrin bandage for treatment of combat casualties.
- 812 Conduct operational testing on SORSS hospital.
- 150 Evaluation of microwave infusion warming device.
- 685 Complete technical testing of the LSTAT.
- 630 Evaluate Armored Medical Evacuation Vehicle in technology demonstrations or advanced warfighting experiments.
- Total 3634

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2844	3723	3616
Appropriated Value	2844	3723	
Adjustments to Appropriated Value	-76	-115	
FY 1999 President's Budget	2768	3608	3634

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Fibrin Bandage MLST 0												
Medical-Dental Filmless Imaging System				X								
MLST 2 IPR												
Intraosseous Infusion Device MLST 1/3												
IPR												
Armored Medical Treatment Vehicle MS			X*									
1/2												
MS 3												X

Project D836

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DATE _____

February 1998

BUDGET ACTIVITY

4 - Demonstration and Validation

PE NUMBER AND TITLE

0603807A Medical Systems - Advanced

Development

PROJECT

D836

D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.

	FY 1998	FY 1999
1. Operating Expenses		
2. Operating Income		
3. Non-Operating Income		
4. Income Before Income Taxes		
5. Income Tax Expense		
6. Income After Income Taxes		
7. Other Comprehensive Income		
8. Comprehensive Income		
9. Retained Earnings		
10. Dividends		
11. Shareholders' Equity		
12. Liabilities		
13. Assets		

	1	2	3	4	1	2	3	4	1	2	3	4
--	---	---	---	---	---	---	---	---	---	---	---	---

Life Support for Trauma and Transport

MS 1

MS 2

X

X

Microwave Infusion Warming Device transition to procurement

AMEV MS 1

Field Triage Light transition to

procurement

Thawed Blood Processing System

MS 1

Field Oxygen Generator transition to procurement

*** Milestone complete.**

Project D836

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603807A Medical Systems - Advanced
Development

D836

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Test and Evaluation	30	60	0
Product Development	2063	3244	3325
Project Management	675	304	309
Total	2768	3608	3634

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Contracts										
USAMMDA					806	1761	2992	2964	Cont	8523
Support and Management Organizations					292	302	252	361	Cont	1207
USAMMDA					616	300	304	289	Cont	1509
Contracts Field					138	375	0	20	Cont	533
Triage										
Test and Evaluation Organizations										
WRAIR					741	30	60	0	Cont	831

Government Furnished Property: None

Subtotal Product Development	1098	2063	3244	3325	9730
Subtotal Support and Management	754	675	304	309	2042
Subtotal Test and Evaluation	741	30	60	0	831
Total Project	2593	2768	3608	3634	12603

Project D836

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
4 - Demonstration and Validation		0603807A Medical Systems - Advanced Development								D837			
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost			
D837	Soldier System Protection-Advanced Development	795	813	807	1010	985	1843	1630	Continuing	Continuing			
<p>A. Mission Description and Justification: This project supports demonstration and validation of preventive medicine materiel including devices, pharmacologicals and other tools to provide protection, sustainment, and enhancement of the physiological and psychological capabilities of soldiers in the face of combat operations under all environmental conditions. Focus is on reduction in the incidence of personnel losses due to preventable disease and non-battle injuries through development of environmental and physiological performance monitors and other preventive medicine countermeasures.</p> <p>Acquisition Strategy: Test and evaluate materiel in government-managed trials to meet fielding requirements.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 9 Continued evaluation of Combat Stress Analysis System. • 786 Validated far-forward telemonitoring and Mobile Medical Mentoring vehicle tactical telemedicine applications through participation in digital Force XXI Brigade-Corps Advanced Warfighting Exercise. <p>Total 795</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 321 Evaluate Personnel Information Carrier (PIC) for integration with existing and developmental hardware and software systems. • 236 Evaluate Medical Situational Awareness and Control software for integration into Army Combat Service Support Control System (CSSCS). • 236 Integrate medical and communications equipment for the Medical Detachment, Telemedicine equipment set. • 20 Small Business Innovative Research/Small Business Technology Transfer Programs. <p>Total 813</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 463 Integrate PIC with Digital medical record and patient identification methodologies. • 344 Integrate PIC with hand-held computer/communications system. <p>Total 807</p>													

Project D837

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BUDGET ACTIVITY		PROJECT	
4 - Demonstration and Validation		D837	
PE NUMBER AND TITLE		0603807A Medical Systems - Advanced Development	
B. <u>Project Change Summary</u>			
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	817	840	871
Adjustments to Appropriated Value	817	840	
FY 1999 President's Budget	-22	-27	
	795	813	807
C. <u>Other Program Funding Summary:</u> Not applicable.			
D. <u>Schedule Profile:</u> Multiple medical developmental products will advance through various events throughout the FY.			
Project D837		Exhibit R-2 (PE 0603807A)	

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY					
4 - Demonstration and Validation					
PE NUMBER AND TITLE					
0603807A Medical Systems - Advanced Development					D837
A. Project Cost Breakdown					
Test & Evaluation	FY 1997	FY 1998	FY 1999		
	0	0	0		
Product Development	782	772	766		
Project Management	13	41	41		
Total	795	813	807		
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or	Project	Total			
Government	Office	Prior to			
Performing	EAC	FY 1997	FY 1998	FY 1999	Budget to
Activity					Complete
Vehicle					Program
Date					
Product Development Organizations					
Contracts		1103	782	772	766
					Cont
					3423
Support and Management Organizations					
USAMMDA		52	13	41	41
					Cont
					147
Test and Evaluation Organizations: None					
Government Furnished Property: None					
Subtotal Product Development		1103	782	772	766
Subtotal Support and Management		52	13	41	41
Subtotal Test and Evaluation		1155	795	813	807
Total Project					3570

Project D837

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603854A Artillery Systems Advanced Development

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	232288	314017	313166	309059	126386	0	0	0	1294916
D505 Crusader - Advanced Development	229561	312019	310881	305967	125129	0	0	0	1283557
DC68 DC68	2727	1998	2285	3092	1257	0	0	0	11359

Mission Description and Budget Item Justification: This program element supports the Program Definition and Risk Reduction (PDRR) efforts for the Crusader - AD Program. The Crusader system is the Army's next generation artillery system consisting of a self propelled howitzer (SPH) and a resupply vehicle (RSV). Crusader will have significantly increased capabilities in the areas of lethality, mobility, survivability, resupply, command and control, and sustainability by capitalizing on emerging, advanced technologies. The SPH will also achieve increased lethality levels through independent operations. The RSV will have significantly increased capabilities in the areas of resupply, mobility and survivability and will provide a single source of ammunition, fuel, propellant and other supplies for the SPH. Beginning in FY1999, efforts previously funded in PE 0603640A, Project DB91, Artillery Propellant Development, will be funded within this program element. This program element focuses on efforts associated with the technology demonstration and validation of Crusader and is correctly placed in Budget Activity 4.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
4 - Demonstration and Validation		0603854A Artillery Systems Advanced Development								D505	
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D505	Crusader - Advanced Development	229561	312019	310881	305967	125129	0	0	0	1283557	
<p>A. Mission Description and Justification: This project supports the Program Definition and Risk Reduction (PDRR) efforts for the Crusader - AD Program. The Crusader system is the Army's next generation artillery system consisting of a self propelled howitzer (SPH) and a resupply vehicle (RSV). Crusader will have significantly increased capabilities in the areas of lethality, mobility, survivability, resupply, command and control, and sustainability by capitalizing on emerging, advanced technologies. The SPH will also achieve increased lethality levels through independent operations. The RSV will have significantly increased capabilities in the areas of resupply, mobility and survivability and will provide a single source of ammunition, fuel, propellant and other supplies for the SPH. Beginning in FY99, efforts previously funded in PE 0603640A, Project DB91, Artillery Propellant Development, will be funded within this project.</p> <p>Acquisition Strategy: Not applicable</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 204685 Product development: Continued development efforts under the Crusader development Phases I & II contract; continued efforts in support of maturation, integration and risk reduction of critical technologies. Initiated component prototype fabrication and demonstration. 22090 Support and management: Continued project management efforts, to include scientific and engineering analysis, product development team support, and engineering management services. 2786 Test and evaluation: Purchased propellant, ammunition and fuzes required for the initiation of Engineering Development Testing (EDT)-A testing; began EDT-A testing. <p>Total 229561</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 277100 Product development: Continue development efforts under the Crusader development Phase II contract. Continue efforts in support of maturation, integration and risk reduction of critical technologies. Continue component prototype fabrication and demonstration. Conduct system level review. Conduct Phase I PEO/CMDT IPR. 19507 Support and management: Continue project management efforts; to include scientific and engineering analysis, product development team support and engineering management services. 7588 Test and evaluation: Purchase ammo for EDT and continue EDT-A testing. 7824 Small Business Innovative Research/Small Business Technology Transfer Programs <p>Total 312019</p>											

Project D505

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February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

**PROJECT
D505**

4 - Demonstration and Validation

0603854A Artillery Systems Advanced Development

FY 1999 Planned Program:

- | | |
|--------|---|
| 274952 | Product development: Continue developmental efforts under the Crusader development Phase II contract. Complete efforts in support of maturation and continue integration and risk reduction of critical technologies. Initiate long lead item buys. Initiate system prototype fabrication (Version I SPH/RSV). Initiate integration and checkout. Complete component fabrication and demonstration. Continue development of MACS for Type Classification. |
| 21521 | Support and management: Continue project management efforts; to include scientific and engineering analysis, product development team support and engineering management services. |
| 14408 | Test and evaluation: Continue EDT-A testing. Establish Cannon Interim Safety Fatigue Life. Initiate Safety Certification Activity. |
| 310881 | Total |

Total	310881
-------	--------

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997
235795
240916
-11355
229561

FY 1998
322291
322291
-10272
312019

<u>FY 1999</u>	
293920	
310881	

C. Other Program Funding Summary

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To Comp</u>	<u>Total Cost</u>
RDTE, BA5, Army, PE 0604854, D503				50000	327021	429225	260928	Cont	Cont
Procurement, WCTV, Army, G83500						42341	97356	Cont	Cont
Procurement, WCTV, Army, G83600						33548	81763	Cont	Cont
RDTE, BA5, Army, PE 0604854, D2KT				410	1190	209	3485	Cont	Cont
RDTE, BA4, Army, PE 0603640, DB91	8103	8258	100					0	115847
Procurement, Anmo, Army, ER 8021				27911	38892	61763	64215	Cont	Cont
RDTE, BA5, Army, PE 0604645, D175	6408		4500	3000	2300			0	48498
Procurement, Anmo, Army, ER 8017			1514	27011	51523	54137	54850	Cont	Cont

D. Schedule Profile

	FY 1997		FY 1998		FY 1999	
1	2	3	4	1	2	3

Awarded Dev Phases I/II Contract System Design Review

Project D505

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
4 - Demonstration and Validation	0603854A Artillery Systems Advanced Development	D505	
<u>D. Schedule Profile</u>		FY 1997	FY 1998
		1 2 3 4	1 2 3 4
Dev Phase I In Process Review (Authorization to enter Phase II)			
Integration Checkout			X
Safety Certification Activity			X
* Milestone completed			

Project D505

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603854A Artillery Systems Advanced

D505

Development

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	204685	277100	274952
Support and Management	22090	19507	21521
Test and Evaluation	2786	7588	14408
SBIR/STTR		7824	
Total	229561	312019	310881

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations									
United Defense, Minneapolis, MN	SS/CPIF	Sep 94	TBD		175619	254662	254452	378934	1063667
ARDEC, Picatinny Arsenal, NJ	PO				26158	17468	16869	8942	69437
TACOM, Warren, MI	PO				1405	832	1388	1756	5381
ARL, Aberdeen Proving Ground, MD	PO				1378	1298	1033	883	4592
Various OGAs					0	2790	1160	1135	5085
Various contracts					125	50	50	0	225

Support and Management Organizations

PM Crusader, Picatinny Arsenal, NJ					5258	6488	6867	8369	26982
ARDEC, Picatinny Arsenal, NJ	PO				8607	7225	8607	10534	34973

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY						D505
4 - Demonstration and Validation				PE NUMBER AND TITLE		
				0603854A Artillery Systems Advanced Development		
Contractor or Government	Contract Method/Type or Funding	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	
Activity	Vehicle		EAC	EAC		
ACALA, Rock Island, IL	PO				FY 1997 121	FY 1998 153
TACOM, Warren, MI	PO				1411	1609
ARL, Aberdeen Proving Ground, MD	PO				861	789
Various OGA's					1136	1144
Various Contracts					4696	2099
SBIR/STTR						7824
Test and Evaluation Organizations						
TECOM, Yuma Proving Grd, AZ, CSTA, APG, MD	PO				2786	7588
						14408
						13885
						38667
Government Furnished Property: None						
Subtotal Product Development					204685	277100
Subtotal Support and Management					22090	27331
Subtotal Test and Evaluation					2786	7588
Total Project					229561	312019
						274952
						391650
						1148387
						25561
						96503
						14408
						13885
						38667
						1283557
						604
						177
						6176
						3778
						4091
						12075
						7824
						38667
						1283557

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE	PROJECT	
4 - Demonstration and Validation		0603856A SCAMP BLKII (SPACE)							February 1998	D389	
	COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D389 SCAMP BLK II *		7701	71	7969	16568	35084	26823	24833	Continuing	Continuing	
<p>* \$5.5M SCAMP BLK II Engineering Feasibility Effort(EFE) reported under 030342A.D386 in FY1996</p> <p>A. Mission Description and Budget Item Justification: Project D389 - SCAMP BLK II: The Single Channel Anti-Jam Manportable (SCAMP) BLK II Terminal will be a manpackable, satellite communications terminal to be employed by units that require range extension for command and control communications. Block II will be used by priority ground tactical users to transmit and receive intelligence, command and control traffic. It will transmit in the Extremely High Frequency (EHF) band and receive in the Super High Frequency (SHF) band. It will provide Low Data Rate (LDR) secure voice at 2400 bps and secure data at 75-2400 bps, as well as interface with Common Hardware/Software devices such as the Lightweight Computer Units and the Hand-Held Terminal Unit. The SCAMP BLK II will have embedded COMSEC, TRANSEC and GPS. The SCAMP BLK II will operate over MILSTAR, UFOE, as well as future AEHF satellites. The SCAMP BLK II will provide Advanced EHF capability such as increased data rates. It will operate in the transmit, receive or standby mode throughout an entire mission (typically 30 days). SCAMP BLK II EHF terminal will provide direct support to the tactical warfighter mobile forces with anti-jam protection, low probability of intercept, and low probability of detection. Engineering Feasibility Efforts (EFE) to develop the SCAMP BLK II in the range of 12-15 pounds was approved in the Acquisition Decision Memorandum. EFE began in FY96 and will continue through FY00. This project provides for the demonstration and validation of advanced technologies and is therefore appropriately funded in Budget Activity 4.</p> <p>Acquisition Strategy: SCAMP Block II will be a manpackable terminal in the 12-15 lb. range. SCAMP Block II began Engineering Feasibility Efforts (EFE) in FY96 placing emphasis on downsizing the following subsystems: Radio Frequency (RF) Generator, Digital Processor, Transmitter and Antenna. These subsystems will utilize technologies such as Millimeter Microwave Integrated Circuits (MIMIC), custom Very Large Scale Integrated Circuits (VLSIC) and increased efficiency power devices. EFE will conclude with the development and demonstrations of prototype BLK II SCAMP hardware leading to a Phase II spiral development with industry partnering acquisition approach.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 5738 Implemented integration of Engineering Feasibility Efforts (EFE) for functional prototype terminals 629 Continued paging prototype system efforts 1334 Continued Defense Advanced Research Project Agency (DARPA) advanced communications technologies Total 7701 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 69 Continue SCAMP BLK II prototype development 2 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR) Total 71 											

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

4 - Demonstration and Validation

0603856A SCAMP BLKII (SPACE)

PROJECT

D389

FY 1999 Planned Program:

- | | | |
|-------|------|--|
| • | 3641 | Completes initial prototype development |
| • | 1228 | Test, evaluate and demonstrate the prototype |
| • | 3100 | Continue engineering feasibility technology improvements |
| | 7969 | |
| Total | | |

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

	FY 1997	FY 1998	FY 1999
--	---------	---------	---------

73

73

-2

71 7969

Change Summary Explanation: Funding: FY1999 (-1700) Army restructured program resulting in some requirements delayed until FY00/01

C. Other Program Funding Summary

Other Procurement Army 2 - SSN: BC 4110

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost Cont
0	0	0	0	0	2883	60502	Cont	

D. Schedule Profile

	FY 1997
1	2
X*	3

FY 1998	3	X
2		

FY 1999
2 3

Continue EEE

Prototype Development and Integration Prototype Demonstrations/Evaluations

*Denotes a completed effort

Project D389

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

4 - Demonstration and Validation

0603856A SCAMP BLKII (SPACE)

D389

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor	1963	0	1542
Government Systems Engineering and Project Management	5738	69	6427
SBIR/STTR		2	
Total	7701	71	7969

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government Method/Type

Performing or Funding

Award or Obligation

Date

Performing Activity

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604201A Aircraft Avionics

DC97

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC97 Aircraft Avionics	17706	31660	7878	1828	2800	46501	31896	Continuing	Continuing

A. Mission Description and Budget Item Justification: This Program Element (PE) funds the development of avionics systems required to horizontally and vertically integrate the battlefield (commonly referred to as "digitization of the battlefield"). Tasks in this PE support research efforts in the engineering and manufacturing development phases of these systems, therefore, the PE is correctly placed in Budget Activity 5. The Army Airborne Command and Control System (A2C2S) functions as a highly mobile command post. When mounted in the UH-60 helicopter with auxiliary equipment, it provides tactical voice, data, and imagery digitized battlefield communications both in secure and nonsecure modes for corps, division, and brigade commanders. The system provides battle commanders access to critical situational awareness and off-board national asset intelligence information via satellite communications. It also provides digitized battlefield communications links with Army combined arms team members, joint service and combined force elements, and intercommunications facilities for up to six operators, and joint interoperability as well as maritime and air traffic control communications. The A2C2S is in response to real world needs of combat maneuver commanders to perform highly mobile and responsive digital, voice, and imagery command and control (C2) functions in the UH-60 helicopter. The UH-60 A2C2S system will enable the commander and essential staff to remain highly mobile with the capability to interject critical C2 across the designated battle area without sacrificing access to information products or jeopardizing continuity of operations due to command post relocation. Interoperability is enhanced with this system by providing the capability to communicate digitally with Navy or Air Force close air support as well as relaying target information. This system will allow Army aviation forces access to C2 and situational awareness information for conduct of close, deep, rear, and security operations. The A2C2S is used to provide C2 for disaster relief, peacekeeping, drug interdiction, and both low and high intensity conflict missions. The A2C2S will play a major role in eliminating costly fratricide incidents via the capability to closely monitor and control operations. Satellite communications provide access to tactical communication systems and enable communication with the force and command structure from Joint Chiefs of Staff (JCS) down to battalion when required. In FY 1997, A2C2S was approved as a two year Warfighter Rapid Acquisition Program (WRAP) initiative which accelerates the development of the program by twenty-one months. RDTE funds are also required to develop data link migration, embedding Battle Command functionality, Joint Variable Message Formatting (JVMF), message buffering into the Improved Data Modem which will enable AH-64D, OH-58D, and Special Operations aircraft to digitally gather, process and transmit information.

Acquisition Strategy: This project is comprised of multiple systems. The A2C2S is being developed by the Naval Research Laboratory. The initial production will be accomplished by the developer until preplanned product improvements are accomplished through FY 00. The production contract will be competitively awarded starting in FY 01.

FY 1997 Accomplishments:

- 8455 Continued development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment
- 1211 Continued development of A2C2S Antenna Interface Module (AIM)
- 1224 Continued development of A2C2S Workstation Software
- 553 Continued test and integration procedures for A2C2S Engineering Development Model

Project DC97

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998	DC97
5 - Engineering and Manufacturing Development		0604201A Aircraft Avionics	
FY 1997 Accomplishments: (continued)			
• 1957	Continued system engineering, logistics, and technical documentation for A2C2S		
• 906	Continued program management support for the A2C2S		
• 450	Accelerated development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment		
• 980	Accelerated development of A2C2S Antenna Interface Module (AIM)		
• 1930	Accelerated development of A2C2S Workstation Software		
• 40	Accelerated life cycle software engineering procedures		
Total	17706		
FY 1998 Planned Program:			
• 3600	Accelerate development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment		
• 1200	Accelerate development of A2C2S Antenna Interface Module (AIM)		
• 1300	Accelerate development of A2C2S Workstation Software		
• 3300	Accelerate test and integration procedures for A2C2S Engineering Development Model (EDM)		
• 1600	Accelerate system engineering, logistics, and technical documentation for A2C2S		
• 13003	Complete development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment		
• 2600	Complete development of A2C2S Antenna Interface Module (AIM)		
• 2038	Continue development of A2C2S Workstation Software		
• 525	Continue test and integration procedures for A2C2S Engineering Development Model (EDM)		
• 550	Continue system engineering, logistics, and technical documentation for A2C2S		
• 1150	Continue program management support for the A2C2S		
• 794	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR)		
Total	31660		
FY 1999 Planned Program:			
• 1225	Complete development of A2C2S Workstation Software		
• 3275	Complete test and integration procedures for A2C2S Engineering Development Model (EDM)		
• 1250	Complete system engineering, logistics, and technical documentation for A2C2S		
• 750	Complete program management support for the A2C2S development		
• 1378	Initiate development of digital data link interfaces to Improved Data Modem and aircraft platforms		
Total	7878		
Project DC97		Exhibit R-2 (PE 0604201A)	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604201A Aircraft Avionics

DC97

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 Pres Budget Request

FY 1997 FY 1998 FY 1999

14694 21669 12729

15008 32669

+2698 -1009

17706 31660 7878

Change Summary Explanation: Funding: The FY 1997 and FY 1998 funding reflects the 3.4M and 11.0M provided by the TRADOC managed Warfighters Rapid Acquisition Program (WRAP) to accelerate the development, production and fielding of the A2C2S. Funding was reprogrammed consistent with Congressional direction. FY 98 also includes a Congressional undistributed reduction of 1.0M. FY 1999 decrease is due to an realignment of funds to higher priority requirements (-4851).

C. Other Program Funding Summary

Aircraft Procurement, Army (APA):

Airborne Command and Control Console AA0710

BLIN 1026*

Aircraft Avionics SSN AA0700, BLIN 1021

* A2C2S shares this BLIN with other Avionics Systems in FY 03 - FY 04, ** BLIN 1021 funds multiple Avionics systems

To Total
Compl Cost
93000 306856FY 1997 FY 1998 FY 1999
24421 18901 17568 36146 116820 93000

32152

D. Schedule Profile:

Continue/Complete Design and Development of A2C2S Workstation

Consoles

Continue/Complete Technical Documentation - A2C2S Test and Integration

Procedures

Continue/Complete Development of A2C2S Antenna Interface Module

AIM)

Continue/Complete A2C2S Systems Engineering, Logistics Processes

Continue/Complete Development of Enhanced Communications terminal,

Work Station Consoles and other Prime Mission Equipment

Continue/Complete Development of A2C2S Workstation Software

Initiate development of digital data link interfaces to Improved Data Modem

And aircraft platforms

* Denotes a completed milestone

FY 1997 FY 1998 FY 1999
1 2 3 4 1 2 3 4FY 1997 FY 1998
1 2 3 4 1 2 3 4FY 1997 FY 1998
1 2 3 4 1 2 3 4

X* X* X* X* X*

X* X* X* X* X*

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY										PE NUMBER AND TITLE		
5 - Engineering and Manufacturing Development										0604201A Aircraft Avionics		
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program		
Support and Management Organizations (continued)												
Air Force			80	80	80				0	80		
SBIR/STTR			794	794			794		0	794		
Test and Evaluation Organizations:												
Ft. Rucker	MIPR		100	100		100			0	100		
Ft. Hood			100	100		100			0	100		
Government Furnished Property: Not Applicable												
Subtotal Product Development					25184	16573	29396	7628	Cont	Cont		
Subtotal Support and Management					2296	933	2264	250	Cont	Cont		
Subtotal Test and Evaluation						200			0	200		
Total Project					27480	17706	31660	7878	Cont	Cont		

Project DC97

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604220A Armed, Deployable OH-58D

D538

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D538 Kiowa Warrior Crew Station Mission Equipment Trainer (CSMET)	1100	0	0	0	0	0	0	0	1100

A. Mission Description and Budget Item Justification: The Crew Station Mission Equipment Trainer (CSMET) is a simulation training device that is designed to support training requirements for the OH-58D Kiowa Warrior flight crew. The CSMET effort responds to the lack of training devices, simulators or simulations (TDSS) available to fielded Kiowa Warrior units. Currently, the aircraft itself provides the only primary sustainment training device. Training provided through the use of the actual aircraft is at best limited due to the inability to employ total system capabilities under combat conditions, i.e., weapon systems. When the actual aircraft is not available, the aviator cannot continue to practice crew skills. As a result, aircrew skills decay rapidly. Maintaining a high level of aircrew skill has a direct impact on combat readiness and proficiency. The CSMET will support refresher and sustainment training of those skills required to initialize, operate and employ the weapons systems, aviation survivability equipment, automatic target handover system, communication and navigation equipment, mast mounted sight, data transfer system, Aviator Night Vision Imaging System (ANVIS) display, and airborne video tape recorder. The CSMET will network with other simulation devices for collective training. The project in this Program Element supports research efforts in the engineering and manufacturing development phase of the acquisition strategy and is, therefore, correctly placed in Budget Activity 5.

Acquisition Strategy: The acquisition strategy is based primarily on the integration of government-furnished data and commercially available non-developmental items. Government-owned OH-58D Kiowa Warrior Cockpit Procedures Trainer Ada software will be integrated into the computer and image generator hardware of choice based on maximum compatibility and interoperability with other aviation simulation systems. Acquisition will be accomplished in four phases -- pre-prototype, prototype, production, and support/sustainment -- and will be accomplished utilizing an Integrated Product Team approach among various government agencies.

FY 1997 Accomplishments:

- 818 Awarded Phase II Development Contract - Prototype Build/Systems Integration
- 190 Maintenance Support for Operational Testing Development and for Operational Testing
- 42 Government Support
- 50 Awarded Front End Analysis Contract
- Total 1100

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
5 - Engineering and Manufacturing Development		D538	
PE NUMBER AND TITLE		0604220A Armed, Deployable OH-58D	
B. Project Change Summary			
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	1130	0	0
Adjustments to Appropriated Value	1102		
FY 1999 President's Budget	1100	0	0
C. Other Program Funding Summary			
APA Budget Activity 2	FY 1997	FY 1998	FY 1999
AZ2200 Kiowa Warrior (CSMET) _1/	3230	7390	4210
1/ Represents only part of the funding in SSN AZ2200.			2550
			17380
D. Schedule Profile			
Initiate Prototype Build Phase (Feb 97)	FY 1997	FY 1998	FY 1999
Begin Test Phase (May 97)	1	2	3
	X*	2	2
	X*	3	3
		4	4
		1	1
		2	2
		3	3
		4	4
*Denotes completed effort			

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604220A Armed, Deployable OH-58D	D538	
A. Project Cost Breakdown			
Prototype Build/System Integration	FY 1997	FY 1998	FY 1999
Developmental Testing	703		
Government Support of Developmental Testing	115		
Operational Testing	22		
Government Support of Operational Testing	190		
Front End Analysis	20		
Total	50	0	0
B. Budget Acquisition History and Planning Information: Not Applicable			
Project D538		Exhibit R-3 (PE 0604220A)	
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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
BUDGET ACTIVITY										February 1998
PE NUMBER AND TITLE										
5 - Engineering and Manufacturing Development										
0604223A Comanche										
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	325299	272187	367823	438723	586385	739377	783556	Continuing	Continuing	
DC72 T800 Engine Engineering Development (LH)	41946	43158	38095	31712	30186	53672	45632	Continuing	Continuing	
D2LT Comanche Operational Test	0	0	0	47	97	295	667	Continuing	Continuing	
D327 Comanche	283353	229029	329728	406964	556102	685410	737257	Continuing	Continuing	

Mission Description and Budget Item Justification: This program element provides for the development and operational testing and evaluation of the RAH-66 Comanche and the T800 growth engine. The Comanche is a multi-mission aircraft optimized for the critical battlefield mission of tactical armed reconnaissance. It provides a globally self-deployable attack platform for light/contingency forces. Comanche is the solution to reconnaissance deficiencies (no night/adverse weather/high/hot/stand-off capability) and is a key component on the digitized battlefield in winning the information war. The Comanche is the Army's technology leader and provides significant horizontal technology transfer within the Army and DoD. Project DC72 provides for continued development and qualification of the T800 growth engine and air vehicle support for integration of the same into the Comanche aircraft. Project D2LT includes funding for the operational testing of Comanche to include Comanche simulation accreditation for Limited User Test and Initial Operational Test and Evaluation. Project D327 provides for development of the airframe, mission equipment package, and integration of the whole system to include training and logistic support. The projects in this program element support research efforts that complete Demonstration/Validation (Dem/Val) prototype efforts and transition to the engineering and manufacturing development phase of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604223A Comanche

DC72

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC72 T800 Engine Engineering Development (LH)	41946	43158	38095	31712	30186	53672	45632	Continuing	Continuing

A. Mission Description and Justification: Project DC72 - T800 Engine Engineering Development (LH): This project includes tasks to design, develop and qualify an advanced technology engine. It provides for the continued development and qualification of the T800 growth engines and air vehicle support for integration of the same into the Comanche aircraft. The growth engine is for the Army's RAH-66 Comanche and other applications.

Acquisition Strategy: Continue work with current contractor leading to FAA certification, military qualification and eventual production.

FY 1997 Accomplishments:

- 8535 Continue basic engine air vehicle support
- 15669 Continue growth engine development
- 13663 Continue contractor development testing
- 4079 Begin manufacturing growth engine for flight test
- Total 41946

FY 1998 Planned Program:

- 10301 Continue basic engine air vehicle support
- 12721 Continue growth engine development
- 11777 Continue contractor development testing
- 7298 Continue manufacturing growth engines for flight test
- 1061 Small Business Innovative Research/Small Business Technology Transfer
- Total 43158

FY 1999 Planned Program:

- 7744 Continue basic engine air vehicle support
- 11962 Continue growth engine development
- 13678 Continue contractor development testing
- 4711 Continue manufacturing growth engines for flight test
- Total 38095

Project DC72

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY			
5 - Engineering and Manufacturing Development		PE NUMBER AND TITLE	PROJECT
		0604223A Comanche	DC72
B. Project Change Summary			
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	41234	44533	41107
Adjustments to Appropriated Value	42116	44533	
FY 1999 Pres Budget Request	-170	-1375	
	41946	43158	38095
C. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.			
D. Schedule Profile			
	FY 1997	FY 1998	FY 1999
	1 2 3	1 2 3	1 2 3 4
Continue basic engine air vehicle support	X*		
Continue growth engine development	X*		
Continue contractor development testing	X*		
Begin manufacturing growth engine for	X*		
Flight test			
Continue basic engine air vehicle support		X	
Continue growth engine development		X	
Continue contractor development testing		X	
Continue mfg growth engines for flt test		X	
Continue basic engine air vehicle support			X
Continue growth engine development			X
Continue contractor development testing			X
Continue mfg growth engines for flt test			X
*Denotes a completed effort			

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
DC72

5 - Engineering and Manufacturing Development

0604223A Comanche

	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown			
Product Development	41810	41804	37802
Program Management Support	136	1354	293
Government Furnished Personnel/Equipment/Facilities	0	0	0
Test & Evaluation	0	0	0
Total	41946	43158	38095

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations (includes contractor testing)										
LHTEC (0453)	C/CPFF	April 92			191766	41810	41804	37802	Cont	Cont
LHTEC (B017)	C/FFP	Jul 85	276821	276821	276821				0	276821
LHTEC(0518)	CPFF	Jul 93	460	460	460				0	460
AVCO (B019)	C/FFP	Nov 84	128526	128526	128526				0	128526

Support and Management Organizations

Comanche PMO & MIPR					12447	136	293	293	Cont	Cont
Gov't Agencies										
PATS contracts	C/FFP			96	96				0	96
Rail	C/FFP	Sep 87		2806	2806				0	2806
Other Contracts	Agreement			400	400				0	400
SBIR/STTR							1061			

Test and Evaluation Organizations

Gov't Agencies	MIPR				9613					9613
----------------	------	--	--	--	------	--	--	--	--	------

Project DC72

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604223A Comanche

D327

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	D327 Comanche	283353	229029	329728	406964	556102	685410	737257	Continuing

A. Mission Description and Justification: Project D327 - Comanche: The Comanche helicopter is a highly sustainable and operationally flexible air cavalry system, incorporating significant reductions in personnel and support equipment, capturing the latest combat technologies and capable of accepting upgrades to meet ever-changing threats. It will dominate the battlefield in the close, deep and rear operations; provide a decisive air cavalry capability in day, night, and adverse weather. It will be operationally tailorable to regional conflicts and provide the battle commander with timely, detailed reconnaissance information and an unprecedented level of lethality.

Acquisition Strategy: Continue work with current contractor leading to Engineering and Manufacturing Development and eventual production.

FY 1997 Accomplishments:

- 23919 Continue digitization effort
- 209079 Continue Dem/Val prototype engineering development
- 40440 Continue flight test program for prototype #1
- 9915 Continue manufacturing of prototype #2
- Total 283353

FY 1998 Planned Program:

- 19333 Continue digitization effort
- 149030 Continue Dem/Val prototype engineering development
- 8299 Update prototype #1 and complete manufacturing of #2
- 39371 Continue flight test program of prototype #1
- 7371 Begin material procurement for Early Operational Capability (EOC) aircraft
- 5625 Small Business Innovative Research/Small Business Technology Transfer
- Total 229029

FY 1999 Planned Program:

- 32193 Continue digitization effort
- 183033 Continue Dem/Val prototype engineering development
- 58370 Continue flight test program for prototype #1 and conduct first flight of prototype #2
- 8615 Continue to update prototypes #1 and #2

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PE NUMBER AND TITLE

0604223A Comanche

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FY 1999	4
2	3

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY											
5 - Engineering and Manufacturing Development											
PE NUMBER AND TITLE											
0604223A Comanche											
A. Project Cost Breakdown											
Product Development	FY 1997	FY 1998	FY 1999								
	260037	200224	307211								
Program Management Support	20013	26026	18483								
Government Furnished Personnel/Equipment/Facilities	2335	1815	2717								
Test & Evaluation	968	964	1317								
Total	283353	229029	329728								
B. Budget Acquisition History and Planning Information											
Performing Organizations											
Contractor or	Method/Type	Award or	Performing	Project	Total						
Performing	or Funding	Obligation	Activity	Office	Prior to						
Activity	Vehicle	Date	EAC	EAC	FY 1997	FY 1998	FY 1999	Budget to	Complete	Total	
Product Development Organizations (includes contractor testing)											
Boeing Sikorsky	C/CPIF	April 91			1948140	257072	197729	301616	Cont	Cont	
JPO A004											
Product Develop-											
(Other contracts)						2965	2495	5595	Cont	Cont	
Other Completed					370288	0	0	0	0	370288	
Contracts											
Support and Management Organizations											
Rail	C/FFP	Sep 87			37869	7349	5777	5000	Cont	Cont	
SysTeam	C/FFP	Oct 91		15181	15181	0	0	0	0	15181	
PATS contracts	C/FFP		15181		94	1784	1139	1500	Cont	Cont	
Other Contracts	Agreement				15709	0	0	0	0	15709	
PMO/Gov't	MIPR				79574	10880	13485	11983	Cont	Cont	
Agencies											
SBIR/STTR							5625				
Test and Evaluation Organizations											
Gov't Agencies	MIPR				8143	968	964	1317	Cont	Cont	

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604223A Comanche

D327

Government Furnished Property

Contract

Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property: None									
Support and Management Property									
Other Gov't Agencies	MIPR			11592	2335	0	0	Cont	Cont
Test and Evaluation Property									
Other Gov't Agencies	MIPR					1815	2717	Cont	Cont

Product Development Property: None

Support and Management Property

Other Gov't

Agencies

Test and Evaluation Property

Other Gov't

Agencies

Total

Prior to

FY 1997

2318428

160019

8143

2486590

FY 1997

260037

22348

968

283353

FY 1998

200224

26026

2779

229029

FY 1999

307211

18483

4034

329728

Budget to

Complete

Cont

Cont

Cont

Cont

Total

Program

Cont

Cont

Cont

Cont

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project D327

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604270A Electronic Warfare (EW) Development									
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		69067	84180	85989	16128	13635	15585	22342	Continuing	Continuing	
D665 Aircraft Survivability Equipment Development		43008	45423	59757	6211	4760	8291	14437	Continuing	Continuing	
D2VT Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS) Operational Test		0	5482	1181	1183	90	0	0	0	7936	
DL12 Signals Warfare Development		15687	28135	20394	8734	8785	7294	7905	Continuing	Continuing	
DL15 Army Reprogramming and Analysis Team (ARAT)		1665	3901	3339	0	0	0	0	0	17670	
DL16 TROJAN Development		1228	1239	1318	0	0	0	0	0	4341	
DL18 SHORTSTOP Development		7479	0	0	0	0	0	0	0	25710	

Mission Description and Budget Item Justification: This program element encompasses engineering and manufacturing development for tactical electronic warfare (EW), signals warfare (SW), aircraft survivability equipment (ASE), battlefield deception, rapid software reprogramming and protection of personnel and equipment from hostile artillery. EW encompasses the development of tactical EW equipment and systems mounted in both ground and air vehicles. The systems under this program provide the Army with the capability to degrade or deny hostile forces the effective use of their communications, counter mortar/counterbattery radars, surveillance radars, infrared/optical battlefield surveillance systems and electronically fused munitions. Existing Army EW systems must be replaced or upgraded to maintain their capability in the face of threat technical advancements. This program element satisfies requirements for brigade, division, corps and higher commanders to conduct electronic warfare to meet tactical and Special Electronic Mission Aircraft (SEMA) requirements, attach/scout, and assault/cargo mission requirements. Signals Warfare Development provides for development of multifunction ground based and airborne intelligence and electronic warfare systems. The High Value Asset Defense System will provide effective protection of personnel and equipment from electronically fused munitions. TROJAN developments will complete Proof-of-Principle R&D for specific TROJAN applications in advanced threat signals processing and prototype software upgrades; high frequency (HF) algorithms for compact antenna array technology (CAAT) configured into small aperture antenna arrays; search and acquisition capabilities for unattended signal collectors; and new digital intelligence collection, processing and dissemination technology. The ARAT Project will develop, test and equip an Army wide infrastructure capable of rapidly reprogramming electronic combat software embedded in offensive and defensive weapon systems. The projects in this PE are in the engineering and manufacturing development phase of the acquisition cycle and therefore are correctly placed in Budget Activity 5.

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PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

D665

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D665 Aircraft Survivability Equipment Development	43008	45423	59757	6211	4760	8291	14437	Continuing	Continuing

A. Mission Description and Justification: Aircraft Survivability Equipment Development provides for the development and system integration of Aircraft Survivability Equipment (ASE) to achieve survivability, reduce vulnerability, and enhance combat effectiveness required to fulfill special electronic mission aircraft (SEMA), attack/scout, and assault/cargo mission requirements. Equipment developed will increase combat effectiveness and potential for mission accomplishment by reducing or eliminating the ability of threat air defense systems to detect, hit, damage or destroy Army aircraft. Developments respond to the approved requirements documents, test and type classification for production and fielding of ASE systems to address infrared, radar, laser and optical/electro-optical directed air defense threats. Efforts in development include new or upgraded systems to counter monopulse, millimeter wave, frequency agile, pulse doppler and continuous wave radars, passive infrared missile seekers and laser directed weapon systems. Continual adjustments are made to this program to meet the changing and evolutionary nature of technology and threat. This program has joint service applications that are coordinated through the Joint Technical Coordinating Group for Aircraft Survivability (JTCG/AS), as well as NATO applications coordinated through DoD. This project also provides the technical base for electronic warfare equipment for Comanche and Special Operations Aircraft. The projects in this program element support research efforts that complete Demonstration/Validation (Dem/Val) prototype efforts and transition into the Engineering and Manufacturing Development (EMD) phase of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.

Acquisition Strategy: Project is comprised of multiple programs which have been competitively awarded.

FY 1997 Accomplishments:

- 20618 Continued EMD of Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS))
- 2530 Continued EMD of Advanced Infrared Countermeasures Munitions (AIRCMM)
- 16228 Continued EMD of Suite of Integrated Radio Frequency Countermeasures (SIRFC)
- 1139 Continued development of Advanced Visual-Electro-Optical Signature Suppression and Analysis (AVESSA)
- 2493 Continued in-house and program management administration
- Total 43008

FY 1998 Planned Program:

- 27132 Continue EMD of ATIRCM/CMWS
- 1783 Continue EMD of the AIRCMM
- 11196 Continue EMD of SIRFC
- 752 Continue development of AVESSA
- 3501 Continue in-house and program management administration

Project D665

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PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

D665

FY 1998 Planned Program: (continued)

• 1059 Small Business Innovative Research/Small Business Technology Transfer Programs
Total 45423

FY 1999 Planned Program:

• 32115 Complete EMD of ATIRCM/CMWS
• 1250 Complete EMD of the AIRCMM
• 21961 Complete EMD of the SIRFC
• 554 Complete development of AVESSA
• 3877 Continue in-house and program management administration
Total 59757

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	43645	46870	37248
Appropriated Value	44579	46870	
Adjustments to Appropriated Value	-1571	-1447	
FY 1999 President's Budget Request	43008	45423	59757

Change Summary Explanation: Funding change in FY98, -1447 is decreases due to undistributed Congressional reductions.

FY99 +22509 increased to continue Engineering and Manufacturing Development (EMD) efforts

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
APA, BA 4 AZ3504 ASE	284	8117	5144	51014	39963	96668	99531	Cont	Cont
APA, BA 2 AA0720 ASE Modifications	25861	18647	2743	12658	21755	17261	14679	Cont	Cont

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
Continue EMD of ATIRCM/CMWS	1	2	3	4	1	2	4
Continue EMD of AIRCMM	X*						
Continue EMD contract of SIRFC	X*						
Continue Development of AVESSA	X*						
Continue EMD of ATIRCM/CMWS							

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PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

D665

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Continue EMD of AIRCMM												
Continue EMD of SIRFC					X							
Continue Development of AVESSA					X							
Complete EMD of ATIRCM/CMWS									X			
Complete EMD of AIRCMM									X			
Complete EMD of SIRFC									X			
Complete Development of AVESSA									X			

*Denotes completed effort

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
5 - Engineering and Manufacturing Development		D665	
PE NUMBER AND TITLE			
0604270A Electronic Warfare (EW) Development			
Total			
Prior to		Budget to	
FY 1997		Complete	
FY 1997		FY 1999	
62322		38898	
11382		7008	
2951		13851	
76655		59757	
Subtotal Product Development		Total	
Subtotal Support and Management		Program	
Subtotal Test and Evaluation		Cont	
Total Project		Cont	

Project D665

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
5 - Engineering and Manufacturing Development		0604270A Electronic Warfare (EW) Development								D2VT																					
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																					
D2VT	Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS) Operational Test	0	5482	1181	1183	90	0	0	0	7936																					
<p>A. Mission Description and Justification: This project supports the operational test for the Advanced Threat Infrared Countermeasures(ATIRCM)/Common Missile Warning System (CMWS) and is new start in FY1998. This project will provide active and passive Infrared Countermeasure (IRCM) protection against infrared guided weapons. The system is designed to meet operational requirements for a modular IRCM system capable of providing awareness and self protection jamming countermeasures. The system is applicable to the AH-64D, MH-47D/E, MH-60K/L, EH-60, UH-60, and CH-47D aircraft. The program has been designated a Tri-Service program, with application to the Air Force and Navy aircraft.</p> <p>Acquisition Strategy: Operational testing is required to determine the effectiveness of the system during the development phase, meet milestone III requirement and enter the production phase</p> <p>FY 1997 Accomplishments: Project not funded in FY 1997</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 5344 Commence ATIRCM/CMWS Operational Test Support • 138 Small Business Innovative Research/Small Business Technology Transfer Programs Total 5482 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1181 Continue ATIRCM/CMWS Operational Test Support Total 1181 <p>B. Project Change Summary</p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1999</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>166</td> <td>2358</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td>5666</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget Request</td> <td>0</td> <td>-184</td> <td>1181</td> </tr> <tr> <td></td> <td></td> <td>5482</td> <td></td> </tr> </table>												FY 1998/1999 President's Budget	FY 1999	FY 1998	FY 1999	Appropriated Value	0	166	2358	Adjustments to Appropriated Value		5666		FY 1999 President's Budget Request	0	-184	1181			5482	
FY 1998/1999 President's Budget	FY 1999	FY 1998	FY 1999																												
Appropriated Value	0	166	2358																												
Adjustments to Appropriated Value		5666																													
FY 1999 President's Budget Request	0	-184	1181																												
		5482																													

Project D2VT

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PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

D2VT

Change Summary Explanation: Funding: FY98 increase due to Congressional increase to Project D2VT instead of Project D665. The increase will be reprogrammed to the correct Project.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Cont	Total Cost Cont
APA, BA 4 AZ3507 ASE (ATIRCM)*				23752	13047	61993	54871		
APA, BA 2 AA0720 ASE Modifications (ATIRCM)	25861	18647	2743	12658	21755	17261	14679		

*Represents only part of the funding in this SSN.

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Cont	Total Cost Cont
1	2	3	4	1	2	3	4		
Initiate ATIRCM/CMWS Test Support									
Continue ATIRCM/CMWS Test Support				X					

Project D2VT

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

0604270A Electronic Warfare (EW) Development

D2VT

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
0	5482	1181
	5482	1181

Performing Organizations

Government	Method/Type
------------	-------------

<u>Activity</u>	<u>Vehicle</u>
Performing	or Learning

Support and Management Organizations

OPTEC

Government Furnished Property: None

Subtotal Product Development

Subtotal Test and Evaluation

FD-302 (Rev. 11-27-70)

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL12

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL12 Signals Warfare Development	15687	28135	20394	8734	8785	7294	7905	Continuing	Continuing

A. Mission Description and Budget Item Justification: Signals Warfare Development provides for a family of integrated ground-based and airborne intelligence and electronic warfare common sensor systems. The Ground Base Common Sensor (GBCS) is an intercept and emitter location system. It provides division commanders with the capability to search, intercept, listen to, precisely locate for hard-kill or order-of-battle resolution, or render ineffective through electronic attack, threat command and control and fire control communications nets. It also identifies and precisely locates threat counterarmor and counterbattery ground surveillance radar emissions, and identifies enemy conventional and Low Probability of Intercept (LPI) communications and non-communications emitters and jam enemy conventional and LPI communications emitters. GBSCS is an evolutionary system which is intended to continually overmatch threat capabilities through a continuous modernization philosophy. Modular components, commercial standards, and open architecture features facilitate change in a cost-effective manner of changing parts via P³ vice whole system replacement. This open architecture feature satisfies the Army requirement to conduct tactical ground Communications Intelligence, Electronic Intelligence, Electronic Support, and Electronic Attack against threat communications and non-communications signals; enhances the Commander's ability to outmaneuver and destroy the enemy by locating or jamming threat command and control, fire control, and air defense centers. The GBSCS will be used in two platform configurations. The GBSCS-Light (GBSCS-L) will be deployed on a highly mobile multipurpose-wheeled vehicle (HMMWV) in support of Light Divisions. The GBSCS-Heavy (GBSCS-H) will be deployed on a tracked vehicle in support of Armored and Mechanized Infantry Divisions. The third platform of the Intelligence and Electronic Warfare Common Sensor System is the Advanced QUICKFIX (AQF) which provides for a material change to the existing helicopter QUICKFIX communications intercept, collection, processing, direction finding, and jamming system and will be deployed to Army Divisions and Armored Cavalry Regiments (ACR). Configured in a Blackhawk Helicopter (EH-60A), it provides the moving platform necessary to provide for location accuracy's sufficient for "steel on target" requirements, as well as for extension of radio Line of Sight (LOS) against target emitters. This project provides for engineering and manufacturing development (EMD) and testing of Intelligence and Electronic Warfare Common Sensor (IEWCS) Subsystems and Systems leading to Milestone III and product improvement of systems after initial production. The Subsystems are:

- The Tactical Communications Jammer (TACJAM-A) will enhance the Division Commander's ability to outmaneuver and kill the enemy by isolating and suppressing enemy fire control and command and control (C²) nets at critical points in the battle; provide electromagnetic overwatch of the threat C² spectrum inclusive of both conventional and modern modulations, e.g., LPI; freeze the enemy in place by jamming C²; and eliminate enemy counterfire by locating High Value Targets (HVTs) for targeting. TACJAM-A consists of state-of-the-art modular and scalable Electronic Support Measures (ESM) and Electronic Countermeasures (ECM) subsystems configured for use on a variety of air and ground prime movers (tracked, wheeled and helicopter).
- The Communication High Accuracy Location System Exploitable (CHALS-X) provides the targeting capability required to support the Division Commander's requirement to locate and kill the enemy by providing location of high value targets. Airborne systems mixed with ground based systems will be capable of precisely locating enemy weapon systems and units (regardless of whether the enemy uses conventional or modern radios) producing target locations sufficiently accurate for first round fire for effect by organic artillery.
- The Common Modules ELINT Subsystem (CMES) provides search, intercept, direction finding (DF), precision location and analysis of the primary non-communication (radar) battlefield threat emitters. While operating in a fully automatic mode, it will enhance the Division Commander's ability to outmaneuver and kill the

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604270A Electronic Warfare (EW) Development	DL12	

enemy by specifically identifying HVTs such as enemy countermortar, and counterbattery ground surveillance radar at critical points in the battle and will provide precise emitter locations with targeting accuracy.

The United States Marine Corps is utilizing the same subsystems as the GBCS and configuring them in a Light Armored Vehicle as a part of the Mobile Electronic Warfare Support System (MEWSS) improvement program.

This project is unclassified and is a cooperative effort with the National Security Agency's Defense Cryptologic Program (DCP), Program Element 030885G, which provides a portion of the funds required for the development of the precision location subsystem and system integration of GBCS-L and GBCS-H.

This program must be considered as a whole with GBCS-L, GBCS-H and AQF. All three programs leverage the others funding.

Acquisition Strategy: In November 1995, the US Army competitively awarded a five-year (basic plus four one-year options) contract to continue development and to acquire the IEWCS systems required to meet initial Army needs. Procured during the first two years of the contract were: Limited Production, Urgent (LP(U)) units of the Ground Based Common Sensor-Light (GBCS-L) system and Low Rate Initial Production (LRIP) units of the Advanced QuickFix (AQF). The contract also provides for continued software and hardware development to correct existing deficiencies and/or to meet Operational Requirement Document (ORD) performance for all IEWCS systems including the Full Scale Engineering Development (FSED) models of the GBCS-Heavy systems. The LP(U) GBCS-L systems will undergo IOT&E in FY98 leading to a full production MS III decision review in 1QFY99. The LRIP AQF systems and the upgraded FSED GBCS-H systems will undergo a joint IOT&E scheduled in FY99 leading to a full production MS III decision reviews in 1QFY00. The current acquisition strategy is: following MS III decision approvals, full scale production for all three systems (GBCS-L, GBCS-H, and AQF) collectively will be awarded competitively.

FY 1997 Accomplishments:

- 87 Conducted special in-process review (SIPR) on AQF ECM)
- 4122 Continued GBCS/AQF improvements to include TACJAM-A Signal Analyzer Upgrade, ECM subsystem integration into AQF and other product improvements resulting from Task Force XXI/Div AWE
- 8506 GBCS-L/AQF software fixes
- 1072 Contractor maintenance support for Task Force XXI/Div AWE
- 1900 ADEXJAM incremental
- Total 15687

FY 1998 Planned Program:

- 0 Continue development and final modification of CCA boards of TACJAM-A ECM to be incorporated in GBCS-H and AQF.
- 0 Develop increased TACJAM-A special signal capabilities and correct existing platform integration problems IAW UKMOU
- 5009 Continue Development and integration of GBCS-H

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PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL12

FY 1998 Planned Program: (continued)

- 1500 Fix existing central software issues
- 4000 Contractor field tests and follow on fixes
- 3049 Conduct training and provide contractor depot level repair in preparation for and support of IOT&E for GBSCS-L
- 10000 Conduct IOT&E on GBSCS-L
- 200 Prepare documentation in preparation of Milestone III for GBSCS-L
- 1386 Full-band DF Calibration
- 2300 OPTEC Support for IOT&E, GBSCS-L
- 691 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
- Total 28135

FY 1999 Planned Program:

- 7728 Continue development and integration of GBSCS-H
- 4166 Conduct training and provide contractor depot repair in support of IOT&E for AQF
- 8000 Conduct IOT&E on AQF/GBSCS-H
- 200 Conduct Milestone III on GBSCS-L
- 300 Prepare documentation in preparation for Milestone III on AQF/GBSCS-H
- Total 20394

B. Project Change Summary

FY 1998/99 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
16065	13874	7228
16414	29186	
-727	-1051	
15687	28135	20394

Change Summary Explanation:

Funding: FY99 - (+6,000) Funds redirected from APA, (AB3000) to RDTE to complete AQF IOT&E.

FY99 - (+7,000) PBD Adjusted funds from OPA, (BZ7326) to RDTE to prepare GBSCS-H for IOT&E.

Schedule: GBSCS-L IOT&E is scheduled to be completed in 4QFY98. GBSCS-L MS III Decision is scheduled for 1QFY99.

GBSCS-H IOT&E will be conducted in 3QFY99 and GBSCS-H MS III Decision review will be held in 1QFY00.

AQF IOT&E will be conducted in 3QFY99 and MS III Decision review will be held in 1QFY00.

Technical: ECM capability will not be available during FY99 IOT&E for GBSCS-H/AQF (except for Demo Purposes). ECM will be included in future enhancements.

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL12

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	4698	3600	2154
Software Development	5544	8860	4862
Integrated Logistics Support	1156	2849	3712
Quality Assurance; Reliability; Maintainability & Availability	360	600	2650
Developmental Test & Evaluation	172	4550	3050
Governmental Test & Evaluation	378	5200	2900
Government Engineering Support	617	770	520
Program Management Support	2450	333	137
Program Management Personnel	312	682	409
SBIR/STTR		691	
Total	15687	28135	20394

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Sanders/AEL	C-CPIF	Jun 89	216686	216334	210931	1903	0	0	0	212834
IBM/Loral	SS-CPFF	Jun 90	52997	52997	47923	0	0	0	0	47923
ESI	C-CPAF	Sep 91	189463	186424	104449	1000	0	0	0	105449
FMC/UDLP	SS-CPFF	Sep 90	15913	15913	13813	1844	1400	500	Cont	Cont
LMFS-O	C-FFP	Nov 95	94577	94577	887	3583	18919	15778	Cont	Cont
(GBCS/AQF)										
Loral-AD/EXJAM	SS-CPIF	Mar 96				1785	0	0	0	1785
Misc.					2888	165	0	0	0	3053
Questech		May95				1650	140	150	Cont	Cont
Support and Management Organizations										
Questech	FFP	May 95			630	2450	267	0	0	3347
Sytex	FFP	Dec 96				0	66	137	Cont	Cont
In-House	Direct				7290	312	682	409	Cont	Cont

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY			PE NUMBER AND TITLE				0604270A Electronic Warfare (EW) Development			DL12		
5 - Engineering and Manufacturing Development												
Contractor or	Contract	Method/Type	Award or	Performing	Project	Total	FY 1997	FY 1998	FY 1999	Budget to	Total	
Government	or Funding		Obligation	Activity	Office	Prior to				Complete	Program	
Performing	Vehicle		Date	EAC	EAC	FY 1997				Cont	Cont	
Activity												
CECOM	MIPR					5930	617	770	520			
Ft Monmouth NJ												
SBIR/STTR								691			691	
Test and Evaluation Organizations												
EPG/Ft. Hood	MIPR					2577	378	2900	2900	Cont	Cont	
OPTEC	MIPR							2300		0	2300	
Contract												
Item	Method/Type	Award or	Delivery			Total	FY 1997	FY 1998	FY 1999	Budget to	Total	
Description	or Funding	Obligation	Date			Prior to				Complete	Program	
	Vehicle	Date				FY 1997						
Government Furnished Property: N/A												
Product Development Property												
NOTE: TACJAM-A/CHALS-X/EFVS, Sanders-AEL/IBM-Loral/FMC, Respectively, identified above as Product Development Organizations												
Support and Management Property: Not applicable												
Test and Evaluation Property: Not applicable												
Subtotal Product Development												
Subtotal Support and Management												
Subtotal Test and Evaluation												
Total Project												
*Total Program does not include funding from other sources.												
**Project Office EAC includes Marine Corps and National Security Agency funds which are not included in the Total Program (Army budget).												

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL15

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL15 Army Reprogramming and Analysis Team (ARAT)	1665	3901	3339	0	0	0	0	0	17670

A. Mission Description and Justification: Army Reprogramming and Analysis Team (ARAT) for Target Sensing Systems (TSS) project will design, develop, implement, test, equip and institutionalize an Army-wide infrastructure capable of rapidly reprogramming electronic combat software embedded in offensive and defensive weapon systems. ATSS are those tactical weapons and sensor systems which rely on embedded, well-defined target or emitter signature data for specific identification. Systems supported by this project include but are not limited to: radar warning receiver and jammer sub-systems of attack, scout, utility and SEMA aircraft; aircraft survivability equipment; automated intelligence collection systems and jammers; advanced threat sensors for air defense, artillery and missile applications, and use as vehicle/troop self-protection systems. The project focuses on advanced information management technologies to: automate the threat recognition process; evaluate the operational impact of threat changes on inventoried sensor; develop, test and evaluate software to counter the change; develop tactical loading devices for deploying or deployed forces; and institutionalize the infrastructure to accomplish these tasks as well as distribute/disseminate the new software. The projects in this PE support development efforts in the engineering and manufacturing development phases of the acquisition strategy and therefore are correctly placed in Budget Activity 5.

Acquisition Strategy: The ARAT to TSS project will design, develop, implement, test, equip and institutionalize all Army-wide infrastructure capable of reprogramming electronic combat software embedded in offensive and defensive weapons systems. The program requirements for software engineering, development, support equipment engineering acquisition, operational training and test and evaluations support will be acquired by the use of time and material contracts. This strategy will further such major program events such as the test and evaluation of off-the-shelf and developmental loading devices, the completion of connectivity of a secure Wide Area Network with all reprogramming centers and the development of flagging models for specific electronic combat survivability systems.

FY 1997 Accomplishments:

- 1120 Tested and evaluated off-the-shelf and developmental loading devices for ADA, Fire Support and Armor TSS
- 165 Initiated study on the feasibility of electronic broadcast reprogramming.
- 380 Improved or modified ARAT flagging capability for ELINT systems.
- Total 1665

FY 1998 Planned Program:

- 3803 Reprogrammed to address high priority requirements for the Army Enterprise Architecture (AEA)
- 98 Small Business Innovative Research/Small Business Technology Transfer Program
- Total 3901

Project DL15

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DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

PROJECT

DL15

FY 1999 Planned Program:

- 827 Initiate integration of Electro-optic/Infrared (EO/IR) based systems into reprogramming infrastructure.
- 327 Develop and design communications architecture paths to support CONUS and OCONUS field unit communications.
- 1283 Implement support plans for PM, Aviation Electronic Combat (SIRFC to AMPS interface).
- 602 Begin development of specific flagging models for AN/APR-39A(V)2 Radar Warning Receiver.
- 300 Development of Multi-Service Electronic Combat Secure Web Site.
- Total 3339

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
3764	4024	3323
3845	4024	
-2180	-123	
1665	3901	3339

Change Summary Explanation: Funding: FY97 Decrement represents funding transferred to support the Task Force XXI Advanced Warfighting Experiment

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
Test and evaluate off-the-shelf and developmental loading devices for ADA, IEW, Fire Support and Armor TSS									
Initiate study on the feasibility of electronic broadcast reprogramming									
Improve or modify ARAT flagging capability for ELINT systems									
Integrate Electro-optic based systems into reprogramming infrastructure.									
Design, develop and test communications architecture paths to support CONUS to OCONUS field unit communications.									

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PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL15

D. Schedule Profile

FY 1997 FY 1998 FY 1999

1 2 3 4 1 2 3 4 1 2 3 4

Begin to implement support plans for PM, Aviation Electronic Combat (SIRFC to AMPS interface)

Begin development of specific flagging models for AN/APR-39A(V)2 Radar

Warning Receiver

Development of Multi-Service Electronic Combat Secure Web Site.

Finalize implementation of support plans for PM, Aviation Electronic Combat (SIRFC to AMPS interface)

Test and evaluate the communications architecture paths to support CONUS to OCONUS field unit communications

Finalize Flagging Model for the AN/APR-39A(V)2 Radar Warning Receiver

Begin Flagging Model for the Suite of Integrated RF Countermeasures (SIRFC)

Develop Training Materials for

Commanders Staff & Unit level personnel (Warfighters Handbook)

*Denotes a completed effort

Project DL15

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	PROJECT
BUDGET ACTIVITY				
5 - Engineering and Manufacturing Development			0604270A Electronic Warfare (EW) Development	DL15
			PE NUMBER AND TITLE	
	FY 1997	FY 1998	FY 1999	
A. Project Cost Breakdown				
Government Engineering Support	360	0	530	
Contract Engineering Support	1080	0	959	
Development Support Equipment Acquisition	25	0	600	
Operational Training	50	0	150	
PM Support	50	0	700	
Test and Evaluation	50	0	200	
Travel	50	0	200	
Reprogrammed to support AEA		3803		
SBIR/STTR		98		
Total	1665	3901	3339	
B. Budget Acquisition History and Planning Information:	Not applicable			

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DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL16

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	1228	1239	1318	0	0	0	0	0	4341
DL16 TROJAN Development									

A. Mission Description and Budget Item Justification: This project is a Tactical Intelligence and Related Activities (TIARA) program. A key factor in modern warfare is the ability to collect, process and use information about an adversary while preventing him from obtaining similar information. TROJAN is a combined operational and readiness mission system which uses advanced networking technology to provide seamless rapid radio relay, secure communications to include voice, data, facsimile, and electronic reconnaissance support to U.S. forces throughout the world. TROJAN operations may be easily tailored to fit military intelligence unit training schedules and surged during specific events to involve every aspect of the tactical intelligence collection, processing, analysis and reporting systems. This project engineers, tests and evaluates new digital intelligence collection, processing and dissemination technology using the fielded TROJAN systems, prior to the acquisition of those technologies. The process that will enable the United States to win the battlefield information war is referred to as digitization. This capability will allow us to process and disseminate real-time intelligence data from various sources; it forms the intelligence needed to issue orders inside the threat decision cycle. To that end, it is imperative the TROJAN system keep pace with digitization initiatives in order to respond aggressively to the emerging intelligence communication threats.

Acquisition Strategy: Competitive contract award utilizing firm fixed price and best value selection procedures for engineering and manufacturing development.

FY 1997 Accomplishments:

- 375 Continued operational evaluation on specific TROJAN applications for non-standard modulations techniques using digital processing technologies.
- 328 Completed operational test, evaluation and engineering of video compression/processing technologies on fielded TROJAN systems.
- 525 Acquired previously developed specialized software for classified pre-processing and enhanced signal processing algorithms.
- Total 1228

FY 1998 Planned Program:

- 247 Conduct operational test and evaluation of previously developed specialized software and enhanced signal processing algorithms).
- 330 Implement and test Warfighter Information Network (WIN) interfaces technology for the TROJAN intelligence network.
- 500 Acquire and apply multi-bandwidth compression algorithm technology to maximize TROJAN intelligence collection network throughput-
- 131 Study the feasibility of incorporating Direction Finding (DF) enhancements to TROJAN Remote Receiving Groups (RRGs).
- 31 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 1239

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February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

Electronic Warfare (EW) Development

PROJECT

DL16

FY 1999 Planned Program:

- | | | |
|---|------|---|
| • | 500 | Continue operational assessment of multi-bandwidth compression algorithm technology to maximize TROJAN Classic intelligence collection network throughput |
| • | 318 | Apply IEW dissemination applications based on Task Force XXI lessons learned |
| • | 500 | Apply Common Remote Systems (CRS) tactical transcription functionality at the RSOs to support tactical to national partnership |
| | 1318 | Total |

B. Project Change Summary

**FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget**

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
1261	1278	1333
1288	1278	
-60	-39	
1228	1239	1318

C. Other Program Funding Summary

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To Compl Cont'd	Total Cost Cont'd
2114	3349	3648	4505	4659	4770	4896		
2085	479	478	0	0	0	0		

D. Schedule Profile

Acquisition Milestones

Contract Award for Video

Compression/Processing

Contract Award for Non-Standard Mod

using Digital Signal Processing Tech.

Contract Award for Spec Software for Sig

Proc Algorithms

 \times^*

Contract Award for

Contract Award for enhanced Sig Proc

Algorithms

Algorithms

Contract Award for WIN Interfaces for

TROJAN Classic Intel Network

X

Contract Award for Multi-bandwidth

11

compression algorithms

compression algorithms

Contract Award for dissemination

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PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL16

D. Schedule Profile

FY 1997

FY 1998

FY 1999

	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones												
Contract Award for Transcription												
Functionality at the RSOCs												
Engineering Milestones												
Prototype insertion-video												
compression/processing												
Spec software for signal processing												
algorithms												
Enhanced signal processing algorithms												
WIN interface for TROJAN Intel Net												
Multi-bandwidth compression algorithms												
Dissemination applications												
Transcription functionality at RSOCs												

*Denotes a completed effort

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development		0604270A Electronic Warfare (EW) Development			DL16
A. Project Cost Breakdown					
Hardware Development	FY 1997	FY 1998	FY 1999		
	751	709	777		
Software Development	477	499	541		
SBIR/STTR		31			
Total	1228	1239	1318		
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or	Project	Total			
Government	Office	Prior to			
Performing	EAC	FY 1997	FY 1998	FY 1999	Budget to
Activity					Complete
					Program
Product Development Organizations: None					
Support and Management Organizations:					
Misc.	517	556	1228	1318	0
C/CPFF	1228				4341
MIPR	1278				
MIPR	1318				
MIPR					
Test and Evaluation Organizations: None					
Government Furnished Property: None					
Subtotal Product Development	0	0	0	0	0
Subtotal Support and Management	556	1228	1239	1318	4341
Subtotal Test and Evaluation	0	0	0	0	0
Total Project	556	1228	1239	1318	4341

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DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604270A Electronic Warfare (EW) Development

DL18

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL18 SHORTSTOP Development	7479	0	0	0	0	0	0	0	25710

A. Mission Description and Budget Item Justification The SHORTSTOP Operational Requirements Document, approved Apr 94, called for a system with a lightweight autonomous configuration to provide protection for personnel and other high value assets against proximity fuzed munitions. The EMD program for the SHORTSTOP Electronic Protection System (SEPS) provided a lightweight, fully integrated Radio Frequency Countermeasure system in three configurations: a manpack system, a stand alone system, and a vehicle mounted system.

Acquisition Strategy: FY98 funding will develop additional capabilities which may be incorporated into SEPS.

FY 1997 Accomplishments:

- 5102 Completed fabrication/contractor qualification testing and delivery of nine (9) prototypes
- 485 Completed fabrication/contractor qualification testing of nine (9) prototypes
- 435 Designed/developed 1553 instrumentation data interface to support live fire test
- 95 Developed installation kit for vehicle mount version
- 1362 Conducted technical field test and IOTE

Total 7479

FY 1998 Planned Program: FY 1998 program/funding currently in PE 0602270A, EW Technology. These funds will be realigned to this PE (0204270A) to more accurately reflect the nature of the work being accomplished.

FY 1999 Planned Program: Project not funded in FY99.

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
9151	0	0
9348	0	
-1869	0	
7479	0	0

Change Summary Explanation: Funding: FY97 (-1430) - Reprogrammed to other PEO IEW&S programs/439 - Congressional reductions and SBIR/STTR

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
5 - Engineering and Manufacturing Development		0604270A Electronic Warfare (EW) Development						February 1998	DL18
C. Other Program Funding Summary		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl
Other Procurement Army SSN: VA8000-SHORTSTOP		5000	5824						Total Cost 10824
D. Schedule Profile		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	
Complete fabrication of nine (9) prototypes		1	2	3	4	1	2	3	4
Conduct contractor qualification testing				X*					
Design/Fabricate Fuze Immulator				X*					
Design/develop 1553 instrumentation data interface				X*					
Develop installation kits				X*					
Deliver nine (9) EMD prototypes				X*					
Conduct Technical Field Test				X*					
Conduct IOTE									
Continue 1553 interface development									
Develop Threat Assessment/Simulation									
Develop Low-Profile Rigid Antenna									
Develop Countermeasure techniques									
Conduct Testing									
*Denotes Completed Milestone									

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - Engineering and Manufacturing Development	0604270A Electronic Warfare (EW) Development		DL18
A. Project Cost Breakdown			
Primary Hardware Development	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	4191		
Systems Engineering	2447		
Government Contractor			
Government Engineering Support	533		
Program Management Support	308		
SBIR/STTR			
Total	7479	0	0
B. Budget Acquisition History and Planning Information Not Applicable.			

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604321A All Source Analysis System (TIARA)

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	37463	26094	28081	30199	39480	34102	17717	Continuing	Continuing
DB19 ASAS Evolutionary Acquisition	34739	23892	23126	26078	35698	29964	12620	Continuing	Continuing
DB41 CI/HUMINT Software Products	0	0	2700	3800	1600	1900	2800	Continuing	Continuing
D2FT ASAS Operational Test	2724	2202	2255	321	2182	2238	2297	Continuing	Continuing

Mission Description and Budget Item Justification: This program element funds the development of the All Source Analysis System (ASAS) Evolutionary Acquisition (EA) system and its operational testing. ASAS is the automated support system for the intelligence and electronic warfare (IEW) functional area of the Army Battle Command System (ABCS). It is a tactically deployable Automated Data Processing (ADP) system designed to support management of IEW operations and target development in battalions, brigades, armored cavalry regiments (ACR), separate brigades, divisions, corps, and echelons above corps (EAC). The projects in this program element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and therefore are correctly placed in Budget Activity 5.

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604321A All Source Analysis System (TIARA)

DB19

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB19 ASAS Evolutionary Acquisition	34739	23892	23126	26078	35698	29964	12620	Continuing	Continuing

A. Mission Description and Justification: Project DB19 - ASAS Evolutionary Acquisition: This project funds the development of the Army's only tactical intelligence fusion project, the ASAS Block II Evolutionary Acquisition, within the Intelligence Fusion Project Office. The successful execution of military operations requires a flexible and modular intelligence and targeting system that will provide tactical commanders a common view of the battlefield and a means for gaining a timely and comprehensive understanding of enemy force deployments, capabilities, and potential courses of action. The ASAS is a ground based, mobile, command and control, intelligence processing system. The ASAS system provides automated support to the combat commander in the areas of intelligence collection management, all-source fusion (signals intelligence, correlation, imagery, and human intelligence) target and situation analysis, single- and multi-source processing, intelligence reporting, electronic warfare/countermeasures, and operational security as well as "digitized Army" automation support to the battlefield commander's command and control.

Acquisition Strategy: The ASAS Block II development program will build upon and expand the capabilities and functionality developed and produced in the ASAS Block I System including conversion to the Army Tactical Command and Control System (ATCCS) Common Hardware/Software Open architecture and the OSD directed Defense Information Infrastructure Common Operating Environment (DII COE) and Modernized Integrated Database (MIDB). Additional software capabilities include enhanced intelligence and command and control functionality, jump and degraded mode operations, enhanced communications, and improved reliability and supportability. ASAS Block II strategy maximizes the use of Government Furnished Equipment (GFE), government and commercial Non-Developmental Item (NDI) software, reuse of proven Office of Secretary of Defense (OSD) and ATCCS Command, Control, Communications and Intelligence (C3I) software, multiple prototype deliveries and continuous user test and evaluation opportunities. Building upon experience and feedback gained from the fielded ASAS and other tactical fusion prototypes, ASAS Block II will undergo management review in FY00.

FY 1997 Accomplishments:

- 31167 Continued ASAS Block II Evolutionary Acquisition Engineering and Manufacturing Development (EMD) Capability Packages
 - Implemented DII COE-Compliant System Services and Common Applications
 - Initiated Unified Database Scheme
 - Continued MIDB effort
 - Initiated Operational Diagnostic Capability
 - Rehosted and improved All Source intelligence functionality from Blk I to Blk II
 - Enhanced RWS to meet evolving DIV XXI capabilities
- 3572 Conducted Development/Operational/Assessment Testing

Total 34739

Project DB19

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604321A All Source Analysis System (TIARA)	DB19	
FY 1998 Planned Program:			
• 20946	Continue ASAS Block II Evolutionary Acquisition EMD Capability Packages		
	-Implement DII COE-Compliant System Services and Common Applications		
	-Develop and integrate CP-ACE Modules		
	-Develop Operational Diagnostic Capability		
	-Complete MIDB Effort		
	-Continue rehost and improvement of All Source intelligence functionality from Blk I		
	-Enhance RWS to meet evolving EXFOR XXI capabilities		
	-Develop objective target analysis capability		
• 2385	Conduct Development/Operational/Assessment Testing		
• 561	Small Business Innovative Research/Small Business Technology Transfer Program		
Total			
FY 1999 Planned Program:			
• 20691	Continue ASAS Block II Evolutionary Acquisition EMD Capability Packages		
	-Integrate and test ASAS Block II final delivery		
	-Complete rehost and improvement of All Source intelligence functionality from Blk I		
	-Complete enhancement of RWS-C to meet evolving EXFOR XXI capabilities		
	-Level 6 DII COE migration		
	-Interface initial CI/HUMINT capability into ACE		
	-Final assessment of "Year 2000" Proof of Operation		
	-Enhance embedded training		
• 2435	Conduct ASAS Block II Testing		
Total			
B. Project Change Summary			
FY1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		35660	21598
Adjustments to Appropriated Value		36433	24798
FY1999 President's Budget		-1694	-906
		34739	23892
			23126
Change Summary Explanation: Funding: FY98 (+2294) Funding increase resulted from Congressional increase of 3200 to support ASAS software upgrade efforts less undistributed Congressional decrements in the appropriations bill(-906) applied against this PE/Proj.			
Project DB19	Exhibit R-2 (PE 0604321A)	Page 3 of 12 Pages	718

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)																																				
DATE February 1998																																				
PROJECT DB19																																				
BUDGET ACTIVITY																																				
5 - Engineering and Manufacturing Development																																				
PE NUMBER AND TITLE																																				
0604321A All Source Analysis System (TIARA)																																				
C. <u>Other Program Funding Summary</u>																																				
OPA (K28801) ASAS Modules																																				
Spares (BS9704)																																				
<table><tr><td>FY 1997</td><td>FY 1998</td><td>FY 1999</td><td>FY 2000</td><td>FY 2001</td><td>FY 2002</td><td>FY 2003</td><td>To</td><td>Total</td></tr><tr><td>13824</td><td>22770</td><td>24117</td><td>60875</td><td>63549</td><td>49714</td><td>63443.</td><td>Compl</td><td>Cost</td></tr><tr><td>585</td><td>0</td><td>0</td><td>1810</td><td>5355</td><td>8028</td><td>8608</td><td>Cont</td><td>Cont</td></tr></table>										FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total	13824	22770	24117	60875	63549	49714	63443.	Compl	Cost	585	0	0	1810	5355	8028	8608	Cont	Cont
FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total																												
13824	22770	24117	60875	63549	49714	63443.	Compl	Cost																												
585	0	0	1810	5355	8028	8608	Cont	Cont																												
D. <u>Schedule Profile</u>																																				
Phase 2 (Remote Workstation																																				
Functionality) Prototype Delivery																																				
Block II Unit Sets																																				
<table><tr><td>FY 1997</td><td>FY 1998</td><td>FY 1999</td><td>FY 1999</td></tr><tr><td>2</td><td>3</td><td>4</td><td>2</td></tr><tr><td>X*</td><td>X*</td><td></td><td>3</td></tr><tr><td>1</td><td>3</td><td>4</td><td>1</td></tr><tr><td>X*</td><td></td><td></td><td>4</td></tr></table>										FY 1997	FY 1998	FY 1999	FY 1999	2	3	4	2	X*	X*		3	1	3	4	1	X*			4							
FY 1997	FY 1998	FY 1999	FY 1999																																	
2	3	4	2																																	
X*	X*		3																																	
1	3	4	1																																	
X*			4																																	
*Initial software drop delivered																																				
X																																				

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

0604321A All Source Analysis System (TIARA)

DB19

B. Budget Acquisition History and Planning Information : Following for Block II ASAS only.

Government Furnished Property

Project DB19

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604321A All Source Analysis System (TIARA)

DB19

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	70347	30639	18573	18490	Cont	18490
Subtotal Support and Management	5719	4100	4561	3800	Cont	3800
Subtotal Test and Evaluation			758	836	Cont	836
Total Project	76066	34739	23892	23126	Cont	23126

Project DB19

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604321A All Source Analysis System (TIARA)								DB41	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DB41	CI/HUMINT Software Products	0	0	2700	3800	1600	1900	2800	Continuing	Continuing	

A. Mission Description and Budget Item Justification: Project DB41 - CI/HUMINT Management System (CHIMS): The project funds the development of the All Source Analysis System (ASAS) Counter Intelligence/Human Intelligence (CI/HUMINT) subsystem. This subsystem is the CI/HUMINT component of the Intelligence and Electronic Warfare (IEW) sub-element of the Army Battle Command System (ABCS). It is a counter intelligence and human intelligence automation system that meets Army tactical CI/HUMINT information collection, investigation, interrogation, operation, document exploitation, and force protection automation requirements. The architecture is built from three sub-elements. The first tier tactical component to a three tiered automation support architecture for tactical CI/HUMINT operations is the CI/HUMINT Automated Tool Set (CHATS). CHATS operates at the Counter Intelligence Team/Interrogation Prisoner of War (IPW) Team level. The other two major components to the CHIMS architecture are the Counter Intelligence Operations/Interrogation Facility Workstation (OPS/IF WS) for DS/GS MI unit command and control which provides functional interfaces to the All Source Analysis System, and the CI Single-Source Processors (CI SSP) which will operate within the ASAS Analysis and Control Element (ACE).

Acquisition Strategy: FY99 and FY00 funding supports continued improvements and functionality enhancements to the CHATS software baseline and the initiation of development of the OPS/IF workstation software baseline. During FY01 through FY03 the OPS/IF software baseline will fully mature and the CHATS baseline will undergo an evolutionary transition to a new generation of modernized COTS and developed software programs. The CHATS system provides agents the capability to manage assets and analyze information collected through investigations, interrogations, collection, and document exploitation. With CHATS, CI units may electronically store collected information in a local database, associate information with digital photography, and transmit/receive information over existing military and civilian communications. The CHATS provides these functions primarily with COTS software operating in a laptop computer within a hardened transport case. Current planning envisions the capability for information exchange between CHATS and the CI/HUMINT Operations/Interrogation Facility (OPS/IF) workstation located at MI Battalions and Brigades. In turn, the OPS/IF workstation will provide processed information to ASAS CI/HUMINT Single-Source Processor (CI/H SSP) workstations at the MI Brigade Analysis Control Team (ACT) and the Division Analysis Control Element (ACE).

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 1500 Develop, investigate and apply functionality enhancements to the CHATS developmental baseline
 - Migrate existing CHATS software to DIU/COE baseline
 - Data handling
 - Mapping and presentation enhancements

Project DB41

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604321A All Source Analysis System (TIARA)

PROJECT DB41

FY 1999 Planned Program: (continued)

- Communications improvements
- Interoperability enhancements
- Follow-on operational testing

- 1200 Initiate development of the OPS/IF workstation and CI Single Source Processor software baselines

Total 2700

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
0	0	0
0	0	2700

Change Summary Explanation: Funding: FY1999 (+2700) funding established to enhance CHATS software baseline functionality

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
OPA (BK5275) CHATS (TIARA)	0	0	0	3700	3201	386	1537	5188	

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
CHATS Hardware/Software Upgrade	1	2	3	4	1	2	3
Develop OPS/IF Workstation					X	X	X
					X	X	X

Project DB41

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604321A All Source Analysis System (TIARA)

PROJECT

DB41

A. Project Cost Breakdown

Systems Development	FY 1997	FY 1998	FY 1999
Matrix Management	0	0	2555
Test	0	0	95
Total	0	0	50
			2700

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TBD	TBD				0	0	0	2555	Cont	2555
Support and Management Organizations										
CECOM	MIPR				0	0	0	95	Cont	95
Test and Evaluation Organizations										
OEC	MIPR				0	0	0	50	Cont	50

Government Furnished Property

Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property: None									
Support and Management Property: None									
Test and Evaluation Property: None									
Subtotal Product Development							2555		2555
Subtotal Support and Management							95		95
Subtotal Test and Evaluation							50		50
Total Project					0	0	2700		2700

Project DB41

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604321A All Source Analysis System (TIARA)

D2FT

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2FT ASAS Operational Test	2724	2202	2255	321	2182	2238	2297	Continuing	Continuing

A. Mission Description and Justification: Project D2FT - ASAS Test and Evaluation: This project finances the direct costs of planning and conducting testing and evaluation of the ASAS by the Operational Test and Evaluation Command (OPTEC). ASAS is an Acquisition Category (ACAT) I system with several dedicated iterations of Test and Evaluation (Technical and Operational) between FY 95 and FY 99. Testing and evaluations are conducted under conditions, as close as possible, to those encountered in actual combat with typical user troops trained to employ the system. As necessary, OPTEC provides Army leadership with an evaluation of effectiveness and suitability of the system. Project D2FT is restructured from PE 0605712A.

Acquisition Strategy: Not applicable, see B19 above

FY 1997 Accomplishments:

- 2724 Conducted ASAS Block II Technical and Operational Testing and Evaluation
- Total 2724

FY 1998 Planned Program:

- 2147 ASAS (ACE and RWS-C) Development and Operational Test
- 55 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 2202

FY 1999 Planned Program:

- 2255 ASAS Phase 4 Final Delivery Operational Test
- Total 2255

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	3648	2447	2415
Appropriated Value	3559	2447	
Adjustments to Appropriated Value	-835	-245	
FY1999 President's Budget	2724	2202	2255

Change Summary Explanation: Funding: FY 1997 (-835) decrease reflects OPTEC change in test plan
FY 1998 (-245) reflects undistributed Congressional reductions applied against this PE/Project

Project D2FT

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604321A All Source Analysis System (TIARA)

PROJECT

D2FT

C. Other Program Funding Summary: Not Applicable

D. Schedule Profile

	D. Schedule Profile					
	FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2
ASAS Testing			X*	X*		
- CP-Single Source						
- Op Eval, Del 2 (RWS-C)						
- Op Eval, Del 3 (ACE)						
- Op Eval, Del 4 (Adv Cap)						

Project D2FT

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				D2FT	
5 - Engineering and Manufacturing Development		0604321A All Source Analysis System (TIARA)					
A. Project Cost Breakdown							
Operational Test, Evaluation, Assessment		FY 1997	FY 1998	FY 1999			
SBIR/STTR		2724	2147	2255			
Total			55				
		2724	2202	2255			
B. Budget Acquisition History and Planning Information							
Performing Organizations							
Contractor or Government	Method/Type	Award or Obligation	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998
Performing Activity	Vehicle	Date	EAC	EAC	FY 1997	FY 1998	FY 1999
Product Development Organizations: None							
Support and Management Organizations: None							
Test and Evaluation Organizations							
OPTEC					1416	2724	2147
SBIR/STTR						55	2255
Government Furnished Property: None							
Subtotal Product Development							
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project							
			1416	2724	2202	2255	8597
			1416	2724	2202	2255	8597
Project D2FT							
						Exhibit R-3 (PE 0604321A)	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE	PROJECT	
5 - Engineering and Manufacturing Development		0604325A Follow-On To TOW							February 1998	DE18	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DE18 Follow-On To TOW		5934	13449	48106	78872	85079	83487	43216	Continuing	Continuing	

A. Mission Description and Budget Item Justification: Provides for Engineering and Manufacturing Development (EMD) for Follow-On To TOW (FOTT), a vehicle mounted, crew served Heavy Anti-tank Missile System which will replace/supplement the TOW missile family. It will be integrated onto and fired from the High Mobility Multi-purpose Wheeled Vehicle (HMMWV) with TOW Improved Target Acquisition System (ITAS), on the Bradley Fighting Vehicle System (BFVS) A3 with Improved Bradley Acquisition Sub-system (IBAS) platforms and the BFVS A2/A2ODS platforms. The FOTT will be capable of operating out to the maximum range required in the FOTT Operational Requirements Document (ORD) and will perform under day/night adverse weather conditions and obscuration. The FOTT will be countermeasures hardened and will increase crew survivability. This program element supports research efforts in the engineering and manufacturing development phase of the acquisition strategy and is therefore correctly placed in budget activity 5.

Acquisition Strategy: The FOTT program will provide a systems approach by leveraging existing missile technologies. This next-generation missile will be compatible with both current and emerging TOW missile platforms. The EMD contract will be competitively awarded. EMD activities will include development of the missile and the ITAS/BFVS A3 (IBAS) applique kits within the 66 month effort, followed by a 20 month effort for the BFVS A2/A2ODS applique kit.

FY 1997 Accomplishments:

- 1634 Continued EMD Preparation: Developed Milestone II Documentation, System Specification and Final Request for Proposal.
- 4300 Supported Contractor Pre-EMD Risk Reduction Tests: Provided Range Support, Range Instrumentation Suite, Range Facility Support, Range Target Sets, Range Test Management, Execution and Data Reduction, TOW Platform Shipment, Integration and Refurbishment.

Total 5934

FY 1998 Planned Program:

- 1696 Release EMD Request for Proposal; Conduct Source Selection; Complete Milestone II; and Award EMD Contract.
- 1097 Pre-Critical Design Review (CDR) Component Hardware Analysis and Procurement of Component Hardware to Support Pre-CDR Tests.
- 8848 Initiate Component Design and System Engineering Analysis for Preliminary Design Review.
- 598 Prepare for Early User Assessment.
- 873 Procure Open System Integration and Simulation Laboratory (SIL) Hardware and Software.
- 337 Small Business Innovative Research/Small Business Technology Transfer Programs.

Total 13449

Project DE18

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604325A Follow-On To TOW

DE18

FY 1999 Planned Program:

- 1384 Conduct Early User Assessment and Post Assessment Analysis to support Preliminary Design Review (PDR).
 - 11829 Conduct Component Design and System Engineering Analysis for PDR; Conduct PDR.
 - 16809 Initiate Procurement of Hardware for Pre-Production Test.
 - 5477 Conduct Pre-CDR Tests and Update FOTT Systems Simulations associated with HMMWV and BFVS Virtual Prototypes, Hardware-in-the-Loop, and SIL.
 - 12607 Continue System Engineering Analysis for Critical Design Review.
- Total 48106

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
5479	13949	50884
5479	13949	
+455	-500	
5934	13449	48106

C. Other Program Funding Summary

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Compl	Cost
---------	---------	---------	---------	---------	---------	---------	-------	------

Missile Procurement, Army
TOW 2 C59403
FOTT H04500

9385	1190	0	0	0	0	0		2275916
						32864	Cont	Cont

D. Schedule Profile

FY 1997	FY 1998	FY 1999
1 2 3	4 1 2 3	4 1 2 3

Release RFP

Complete Source Selection

Award EMD Contract

Early User Assessment I

Preliminary Design Review

* Milestone Completed

Project DE18

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		February 1998	
5 - Engineering and Manufacturing Development		0604325A Follow-On To TOW		DE18	
A. Project Cost Breakdown					
Primary Hardware Development		FY 1997	FY 1998	FY 1999	
Program Management Support			8342	41166	
Developmental Test and Evaluation		1634	3473	4044	
SBIR/STTR		4300	1297	2896	
Total		5934	337	48106	
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or Contract		Project Office	Total Prior to FY 1997	FY 1997	FY 1998
Government Method/Type Award or Obligation Date		EAC	FY 1997	FY 1997	FY 1998
Performing Activity		EAC	FY 1997	FY 1997	FY 1998
Product Development Organizations					
PRIME	TBD	TBD		8679	41166
Support and Management Organizations					
PM CCAWS,	PO		689	1638	1869
RSA, AL					
AMCOM, RSA,	PO		772	1245	1330
AL					
MISC	PO		173	590	845
Test and Evaluation Organizations					
TECOM, APG,	PO		4300	1297	2896
MD					
Product Development Organizations: None					
Government Furnished Property: None					
Subtotal Product Development				8679	41166
Subtotal Support and Management			1634	3473	4044
Subtotal Test and Evaluation			4300	1297	2896
Total Project			5934	13449	48106
				Cont	49845
				Cont	9151
				Cont	8493
				Cont	67489
Project DE18					
Exhibit R-3 (PE 0604325A)					

Project DE18

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604604A Medium Tactical Vehicles								DH07	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DH07	Medium Tactical Vehicles	5719	3614	0	0	1613	0	0	Continuing	Continuing	
<p>A. Mission Description and Budget Item Justification: This program element (PE) supports modernization of the Army's medium truck fleet. The Family of Medium Tactical Vehicles (FMTV) will replace aging M44 Series 2 1/2 ton trucks, M39 and M809 Series 5 ton trucks which are beyond their average useful life of 20-22 years. FMTV will also provide a follow-on to the current M939/A2 Series 5 ton truck. FMTV is required to fill 2 1/2 (LMTV) and 5 ton truck (MTV) requirements, resolve operational deficiencies and operate throughout the theater as multi-purpose transportation vehicles used by combat, combat support and combat service support units. This system is designed to be rapidly deployable worldwide and operate on primary and secondary roads, trails, and cross-country terrain. Vehicles operate in all climatic conditions. In FY 1997 and FY 1998, Project DH07 funds the Army's portion of the Medium Tactical Truck Remanufacture Program (MTTR). This research and development effort is a prelude to embarking on a major remanufacture program to increase the mobility, maintainability and reliability of the existing 5 ton fleet. Funding in FY97 and FY98 harmonizes the Army effort with the U.S. Marine Corps Medium Tactical Vehicle Replacement (MTVR) program as directed by Congress. The Army portion of this program is designed to reduce O&S costs and resolve operational deficiencies associated with the existing fleet. This Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.</p> <p>Acquisition Strategy: The acquisition strategy for the Medium Tactical Truck Remanufacture Program (MTTR) is in two phases. In the first phase, two CPFF contracts were awarded. Each contractor produced five Army and five USMC prototypes. The FY98 funding will be used to complete testing of the Army vehicles. Based on the test results, as well as production proposals, one contractor will be selected for award of a five year multiyear production contract.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 4337 Prototype Contracts (MTTR) • 217 Support Costs (Engineering/Quality/Matrix) (MTTR) • 1165 Developmental Testing (MTTR) Total 5719 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 2145 Developmental Testing (MTTR) • 1250 Support Costs (Engineering/Quality/Matrix) (MTTR) • 129 Technical Support Contract (MTTR) • 90 Small Business Innovative Research/Small Business Technology Transfer Programs Total 3614 <p>FY 1999 Planned Program: Project not funded in FY 1999</p>											

Project DH07

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604604A Medium Tactical Vehicles

DH07

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997

5874

6000

-281

5719

FY 1998

3729

3729

-115

3614

FY 1999

0

0

C. Other Program Funding Summary

OPA1 5 Ton Extended Svc Pgm (ESP) DV0010

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

To

Total

To

Comp

Cost

Cont

31382

31428

30608

35131

10819

1

2

3

4

1

2

3

4

D. Schedule Profile

Award Prototype Contract (MTTR)

Developmental Testing (MTTR)

Award Production Contract (MTTR)

FY 1997

FY 1998

FY 1999

FY 1998

FY 1999

FY 1999

FY 1999

To

Comp

Cost

Cont

31382

31428

30608

35131

10819

1

2

3

4

1

2

3

4

*Denotes Milestones Completed

Project DH07

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RD T&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

0604604A Medium Tactical Vehicles

**PROJECT
DH07**

A. Project Cost Breakdown									
Product Development								<u>FY 1998</u>	<u>FY 1999</u>
Developmental Testing								1469	
								2145	
Total								3614	0
B. Budget Acquisition History and Planning Information									
Performing Organizations									
Contractor or Government	Contract Method/Type or Funding	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	Budget to Complete
Activity	Vehicle								Program
Product Development Organizations									
In-House/Eng TACOM, MI			1612	1612	150	212	1250		1612
Govt Eng (all other field activities)			5	5		5			5
SSSEB, TACOM, MI (MTTR)			199	199	199				199
Oshkosh Truck Corp. (Prototype MTTR)	C-CPFF	20 Nov 96	2411	2411	488	1923			2411
AM General (Prototype MTTR)	C-CPFF	20 Nov 96	2902	2902	488	2414			2902
SBIR/STTR							90		90
Support and Management Organizations									
Camber (Tech Spt Contract)			227	227	98		129		227
Test and Evaluation Organizations									
TECOM (MTTR)			3310	3310		1165	2145		3310
Government Furnished Property - None									

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			DH07		
5 - Engineering and Manufacturing Development	0604604A Medium Tactical Vehicles					
	Total					
	Prior to					
	FY 1997	FY 1997	FY 1998	FY 1999	Budget to	Total
	1325	4554	1340		Complete	Program
Subtotal Product Development	98		129			7219
Subtotal Support and Management		1165	2145			227
Subtotal Test and Evaluation		5719	3614			3310
Total Project	1423					10756

Project DH07

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998																						
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT																						
5 - Engineering and Manufacturing Development		0604609A Smoke, Obscurent and Target Defeating		D200																						
		System - Engineering Development																								
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																
D200	Smoke/Obscurent Systems	0	0	706	947	2593	4910	8567	Continuing	Continuing																
<p>A. Mission Description and Budget Item Justification: This program element supports the conduct of Engineering and Manufacturing Development (EMD) in smoke and obscurant agents, munitions, and devices to improve survivability of the combined arms force, complement combined weapons systems, and enhance force effectiveness and combat power. Funding supports (1) Motorized Dual Purpose Mechanical Smoke Generator, M56 mounted on the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) to provide large area visual, infrared (IR) and millimeter wavelength (MMW)-radar obscuration; and (2) Vehicle Engine Exhaust Smoke System which provides on-board obscuration of heavy armor systems. The project in this Program Element supports efforts in the engineering and manufacturing development phase of the acquisition strategy and are therefore correctly placed in Budget Activity 5.</p> <p>Acquisition Strategy: Project D200 - Smoke/Obscurants: The Vehicle Engine Exhaust Smoke System (VEESS) will be developed in-house and will be applied to systems via modification work order.</p> <p>FY 1997 Accomplishments: Project not funded in FY 1997</p> <p>FY 1998 Planned Program: Project not funded in FY 1998</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 706 VEESS - Initiate engineering study/proof of principle and modification work order. <p>Total 706</p> <p>B. Project Change Summary</p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> <td>703</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>0</td> <td>706</td> </tr> </table>											FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	0	703	Adjustments to Appropriated Value				FY 1999 President's Budget	0	0	706
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																							
Appropriated Value	0	0	703																							
Adjustments to Appropriated Value																										
FY 1999 President's Budget	0	0	706																							

Project D200

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE
5 - Engineering and Manufacturing Development		0604609A Smoke, Obscurant and Target Defeating System - Engineering Development							February 1998
									PROJECT D200
C. Other Program Funding Summary		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont'd
RDTE,A Budget Activity 2, PE 0602622A		2193	3577	5116	4090	4132	4188	4261	Total Cost Cont'd
Project A552 Smoke/Novel Effects Munitions									
RDTE,A Budget Activity 4, PE 063627A,		5573	0	0	0	0	0	0	5573
Project DE79 Smoke, Obscurant and Equipment									
Defeating Systems									
Other Procurement Army, Activity 3, (OPA-3)									
M99103, M56 Smoke Generator		12447	12267	15110	0	0	20021	18074	Cont'd
M99107 M58 Smoke Generator		11523	8946	10622	7726	9597	11440	9511	Cont'd
D. Schedule Profile		FY 1997	FY 1998	FY 1999					
1		2	3	4	1	2	3	4	
VEESS-Initiate study/mod work order						4	1	2	
							X		

Project D200

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development		0604609A Smoke, Obscurant and Target Defeating System - Engineering Development	D200
A. <u>Project Cost Breakdown</u>			
Primary Hardware Development			
	Total	FY 1997 0	FY 1998 0
			FY 1999 706 706
B. <u>Budget Acquisition History and Planning Information:</u> Not applicable.			

Project D200

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Exhibit R-3 (PE 0604609A)

Project D200

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604611A Javelin								D499	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D499	JAVELIN	5855	7771	5277	0	0	0	0	0	633848	

A. Mission Description and Budget Item Justification: This program provides for the continuation of Engineering and Manufacturing Development (EMD) of a manportable antitank weapon system for the combined arms team employment. The infantry must have the capability to defeat numerically superior armored forces. The present medium infantry antitank weapon is DRAGON. The system developed within this program element will replace the DRAGON to provide enhanced lethality for the early entry force. It will have a high kill rate against all known armor threats at extended ranges under day/night, adverse weather conditions and in the presence of battlefield obscurants. This system will be hardened against countermeasures and will not require extensive training for effective employment. Active protection system developments will be considered and modifications studied to defeat these devices if necessary. Software improvements to maintain lethality against evolving targets and countermeasures and increase robustness of system performance in all environments will be pursued. Integration of Advanced Main Charge Warhead (AMCW) and Lethality Improvement Tracker Enhancement (LITE) technologies will be pursued. This project supports research efforts in the engineering and manufacturing development phase of the acquisition strategy and therefore is appropriate to Budget Activity 5.

Acquisition Strategy: Not applicable.

FY 1997 Accomplishments:

- 192 Program Management
- 814 Test Support
- 1297 Lethality Improvement Tracker Enhancement
- 3552 Advanced Main Charge Warhead
- Total 5855

FY 1998 Planned Program:

- 1910 Program Management
- 1575 Test Support
- 2716 Lethality Improvement Tracker Enhancement
- 1375 Advanced Main Charge Warhead
- 195 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 7771

Project D499

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PE NUMBER AND TITLE

**PROJECT
D499**

FY 1999 Planned Program:

- | | | |
|---|------|------------------------------|
| • | 264 | Program Management |
| • | 4661 | Test Support |
| • | 352 | Advanced Main Charge Warhead |
| | 5277 | Total |

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

C. Other Program Funding Summary

Missile Procurement, Army
CC0007 Javelin (AAWS-M)

D. Schedule Profile

Full Rate Production Decision (ASARC)

Award Option 2 of Multi-Year 1

Award LITE 1 Contract

Award AMCW Contract

AMCW Final Design

AMCW Tandem Test

Award LITE 1 Contract

Award LITE Contract LITE 1 Captive Flight Test

Award AMCW Contract Option 1 (SAP)

AMCW Live Fire Test

AMCW LIVE File Test

AMCW Fallwell Test
Award AMCW Contract Option 2 (SAP)

Award AMCW Confidentiality Agreement

AMCW Baseline Test
AMCW Live Fire Flight Test

*Completed Milestone

***Completed Milestone**

Project D499

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0604611A Javelin

PROJECT

D499

5 - Engineering and Manufacturing Development

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Program Management	192	1910	264
Test Support	814	1575	4661
Lethality Improvement Tracker Enhancement	1297	2716	
Advanced Main Charge Warhead	3552	1375	352
Small Business Innovative Research/Small Business Technology Transfer Programs		195	
Total	5855	7771	5277

B. Budget Acquisition History and Planning Information

Performing Organizations

Contract

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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Product Development Organizations

TI/MM JV EMD	C/PIF	21Jun89			493913					493913
TI/MM JVAMCW	CPIF	28Mar94			4521					4521
TI/MM JV LITE 1	CPAF	28Jun96			378	1297				1675
RTI SYS AMCW	CPIF	9Jun97			N/A	3552	1375		352	5279
RTI SYS LITE 1	CPAF	30Jan98			N/A		2716			2716

Support and Management Organizations

Support Contractor 8(a)CPFF

Program Mgt

Test and Evaluation Organizations

TECOM

OPTEC

Government Furnished Property: Not applicable

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project D499

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604619A Landmine Warfare								D088	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D088	Wide Area Mine Engineering Development	25355	19189	23189	0	0	0	0	0	250386	
<p>A. Mission Description and Budget Item Justification: The Wide Area Munition (WAM), a "smart," remotely-reprogrammable antitank mine, provides unique control and offensive capability for a variety of missions. WAM will significantly reduce Army losses by using advanced smart munitions technology on the battlefield. The program provides for Engineering and Manufacturing Development (EMD) of the basic WAM deployed by hand emplacement with one-way communications. The pre-planned product improvement basic WAM provides a two-way command and control and redeployable capability. The project in this Program Element supports the EMD phase of the acquisition strategy for the WAM and is, therefore, appropriately placed in Budget Activity 5.</p> <p>Acquisition Strategy: The basic WAM transitioned to Low Rate Production (LRP) in 3QFY96. A sole source Fixed Price Incentive Fee contract was awarded to the EMD contractor for the LRP quantity. Type classification standard is planned for 3QFY98. Production buys will be included under the LRP contract as Firm Fixed Price options. A sole source Cost Plus Incentive Fee contract for EMD of an improved WAM was awarded to the basic WAM developer in FY 1996.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 8341 Completed basic WAM design. • 5788 Completed basic WAM Technical Test hardware fabrication. • 6103 Completed Technical Test/Initial Operational Test and Evaluation/Live Fire Test for basic WAM. • 313 Conducted testing for WAM prototype individual trainer and collective trainer software. • 4810 Completed WAM PIP Command and Control Sub-system preliminary designs Total 25355 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 11789 Conduct WAM PIP preliminary design and functional configuration audit efforts • 1240 Complete WAM PIP Trainer and System Analysis Models • 5720 Fabricate hardware and conduct WAM Basic Cold Region Test and Evaluation • 440 Small Business Innovative Research/Small Business Technology Transfer Programs Total 19189 											

Project D088

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604619A Landmine Warfare

D088

FY 1999 Planned Program:

- 12184 Complete WAM PIP functional design
- 7530 Complete fabrication of Technical Test/Initial Operational Test and Evaluation hardware for WAM PIP.
- 3175 Complete preliminary technical testing for WAM PIP
- 300 Complete testing of trainers and software.
- Total 23189

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	26288	19800	23075
Appropriated Value	26909	19800	
Adjustments to Appropriated Value	-1554	-611	
FY 1999 President's Budget	25355	19189	23189

Change Summary Explanation:

Funding: FY 97-\$280K reprogrammed to PE 0603619A. Balance of adjustment associated with undistributed congressional reductions (-1264).
 Schedule: Type Classification for basic WAM rescheduled from 4QFY97 to 3QFY98 due to requirement to repeat cold weather testing.

C. Other Program Funding Summary

RDTE, A Budget Activity 5 PE 0604808A, Project D016, Mine Systems Engineering Development Procurement Ammunition, Army WAM, E78100 WAM Remote Control Unit, G01000 WAM Collective Trainer, E78104	FY 1997		FY 1998		FY 1999		FY 2000		FY 2001		FY 2002		FY 2003		FY 2004		FY 2005		FY 2006		FY 2007		FY 2008		FY 2009		FY 2010		FY 2011		FY 2012		FY 2013		FY 2014		FY 2015		FY 2016		FY 2017		FY 2018		FY 2019		FY 2020		FY 2021		FY 2022		FY 2023		FY 2024		FY 2025		FY 2026		FY 2027		FY 2028		FY 2029		FY 2030		FY 2031		FY 2032		FY 2033		FY 2034		FY 2035		FY 2036		FY 2037		FY 2038		FY 2039		FY 2040		FY 2041		FY 2042		FY 2043		FY 2044		FY 2045		FY 2046		FY 2047		FY 2048		FY 2049		FY 2050		FY 2051		FY 2052		FY 2053		FY 2054		FY 2055		FY 2056		FY 2057		FY 2058		FY 2059		FY 2060		FY 2061		FY 2062		FY 2063		FY 2064		FY 2065		FY 2066		FY 2067		FY 2068		FY 2069		FY 2070		FY 2071		FY 2072		FY 2073		FY 2074		FY 2075		FY 2076		FY 2077		FY 2078		FY 2079		FY 2080		FY 2081		FY 2082		FY 2083		FY 2084		FY 2085		FY 2086		FY 2087		FY 2088		FY 2089		FY 2090		FY 2091		FY 2092		FY 2093		FY 2094		FY 2095		FY 2096		FY 2097		FY 2098		FY 2099		FY 2100		FY 2101		FY 2102		FY 2103		FY 2104		FY 2105		FY 2106		FY 2107		FY 2108		FY 2109		FY 2110		FY 2111		FY 2112		FY 2113		FY 2114		FY 2115		FY 2116		FY 2117		FY 2118		FY 2119		FY 2120		FY 2121		FY 2122		FY 2123		FY 2124		FY 2125		FY 2126		FY 2127		FY 2128		FY 2129		FY 2130		FY 2131		FY 2132		FY 2133		FY 2134		FY 2135		FY 2136		FY 2137		FY 2138		FY 2139		FY 2140		FY 2141		FY 2142		FY 2143		FY 2144		FY 2145		FY 2146		FY 2147		FY 2148		FY 2149		FY 2150		FY 2151		FY 2152		FY 2153		FY 2154		FY 2155		FY 2156		FY 2157		FY 2158		FY 2159		FY 2160		FY 2161		FY 2162		FY 2163		FY 2164		FY 2165		FY 2166		FY 2167		FY 2168		FY 2169		FY 2170		FY 2171		FY 2172		FY 2173		FY 2174		FY 2175		FY 2176		FY 2177		FY 2178		FY 2179		FY 2180		FY 2181		FY 2182		FY 2183		FY 2184		FY 2185		FY 2186		FY 2187		FY 2188		FY 2189		FY 2190		FY 2191		FY 2192		FY 2193		FY 2194		FY 2195		FY 2196		FY 2197		FY 2198		FY 2199		FY 2200		FY 2201		FY 2202		FY 2203		FY 2204		FY 2205		FY 2206		FY 2207		FY 2208		FY 2209		FY 2210		FY 2211		FY 2212		FY 2213		FY 2214		FY 2215		FY 2216		FY 2217		FY 2218		FY 2219		FY 2220		FY 2221		FY 2222		FY 2223		FY 2224		FY 2225		FY 2226		FY 2227		FY 2228		FY 2229		FY 2230		FY 2231		FY 2232		FY 2233		FY 2234		FY 2235		FY 2236		FY 2237		FY 2238		FY 2239		FY 2240		FY 2241		FY 2242		FY 2243		FY 2244		FY 2245		FY 2246		FY 2247		FY 2248		FY 2249		FY 2250		FY 2251		FY 2252		FY 2253		FY 2254		FY 2255		FY 2256		FY 2257		FY 2258		FY 2259		FY 2260		FY 2261		FY 2262		FY 2263		FY 2264		FY 2265		FY 2266		FY 2267		FY 2268		FY 2269		FY 2270		FY 2271		FY 2272		FY 2273		FY 2274		FY 2275		FY 2276		FY 2277		FY 2278		FY 2279		FY 2280		FY 2281		FY 2282		FY 2283		FY 2284		FY 2285		FY 2286		FY 2287		FY 2288		FY 2289		FY 2290		FY 2291		FY 2292		FY 2293		FY 2294		FY 2295		FY 2296		FY 2297		FY 2298		FY 2299		FY 2300		FY 2301		FY 2302		FY 2303		FY 2304		FY 2305		FY 2306		FY 2307		FY 2308		FY 2309		FY 2310		FY 2311		FY 2312		FY 2313		FY 2314		FY 2315		FY 2316		FY 2317		FY 2318		FY 2319		FY 2320		FY 2321		FY 2322		FY 2323		FY 2324		FY 2325		FY 2326		FY 2327		FY 2328		FY 2329		FY 2330		FY 2331		FY 2332		FY 2333		FY 2334		FY 2335		FY 2336		FY 2337		FY 2338		FY 2339		FY 2340		FY 2341		FY 2342		FY 2343		FY 2344		FY 2345		FY 2346		FY 2347		FY 2348		FY 2349		FY 2350		FY 2351		FY 2352		FY 2353		FY 2354		FY 2355		FY 2356		FY 2357		FY 2358		FY 2359		FY 2360		FY 2361		FY 2362		FY 2363		FY 2364		FY 2365		FY 2366		FY 2367		FY 2368		FY 2369		FY 2370		FY 2371		FY 2372		FY 2373		FY 2374		FY 2375		FY 2376		FY 2377		FY 2378		FY 2379		FY 2380		FY 2381		FY 2382		FY 2383		FY 2384		FY 2385		FY 2386		FY 2387		FY 2388		FY 2389		FY 2390		FY 2391		FY 2392		FY 2393		FY 2394		FY 2395		FY 2396		FY 2397		FY 2398		FY 2399		FY 2400		FY 2401		FY 2402		FY 2403		FY 2404		FY 2405		FY 2406		FY 2407		FY 2408		FY 2409		FY 2410		FY 2411		FY 2412		FY 2413		FY 2414		FY 2415		FY 2416		FY 2417		FY 2418		FY 2419		FY 2420		FY 2421		FY 2422		FY 2423		FY 2424		FY 2425		FY 2426		FY 2427		FY 2428		FY 2429		FY 2430		FY 2431		FY 2432		FY 2433		FY 2434		FY 2435		FY 2436		FY 2437		FY 2438		FY 2439		FY 2440		FY 2441		FY 2442		FY 2443		FY 2444		FY 2445		FY 2446		FY 2447		FY 2448		FY 2449		FY 2450		FY 2451		FY 2452		FY 2453		FY 2454		FY 2455		FY 2456		FY 2457		FY 2458		FY 2459		FY 2460		FY 2461		FY 2462		FY 2463		FY 2464		FY 2465		FY 2466		FY 2467		FY 2468		FY 2469		FY 2470		FY 2471		FY 2472		FY 2473		FY 2474		FY 2475		FY 2476		FY 2477		FY 2478		FY 2479		FY 2480		FY 2481		FY 2482		FY 2483		FY 2484		FY 2485		FY 2486		FY 2487		FY 2488		FY 2489		FY 2490		FY 2491		FY 2492		FY 2493		FY 2494		FY 2495		FY 2496		FY 2497		FY 2498		FY 2499		FY 2500		FY 2501		FY 2502		FY 2503		FY 2504		FY 2505		FY 2506		FY 2507		FY 2508		FY 2509		FY 2510		FY 2511		FY 2512		FY 2513		FY 2514		FY 2515		FY 2516		FY 2517		FY 2518		FY 2519		FY 2520		FY 2521		FY 2522		FY 2523		FY 2524		FY 2525		FY 2526		FY 2527		FY 2528		FY 2529		FY 2530		FY 2531		FY 2532		FY 2533		FY 2534		FY 2535		FY 2536		FY 2537		FY 2538		FY 2539		FY 2540		FY 2541		FY 2542		FY 2543		FY 2544		FY 2545		FY 2546		FY 2547		FY 2548		FY 2549		FY 2550		FY 2551		FY 2552		FY 2553		FY 2554		FY 2555		FY 2556		FY 2557		FY 2558		FY 2559		FY 2560		FY 2561		FY 2562		FY 2563		FY 2564		FY 2565		FY 2566		FY 2567		FY 2568		FY 2569		FY 2570		FY 2571		FY 2572		FY 2573		FY 2574		FY 2575		FY 2576		FY 2577		FY 2578		FY 2579		FY 2580		FY 2581		FY 2582		FY 2583		FY 2584		FY 2585		FY 2586		FY 2587		FY 2588		FY 2589		FY 2590		FY 2591		FY 2592		FY 2593		FY 2594		FY 2595		FY 2596		FY 2597		FY 2598		FY 2599		FY 2600		FY 2601		FY 2602		FY 2603		FY 2604		FY 2605		FY 2606		FY 2607		FY 2608		FY 2609		FY 2610		FY 2611		FY 2612		FY 2613		FY 2614		FY 2615		FY 2616		FY 2617		FY 2618		FY 2619		FY 2620		FY 2621		FY 2622		FY 2623		FY 2624		FY 2625		FY 2626		FY 2627		FY 2628		FY 2629		FY 2630		FY 2631		FY 2632		FY 2633		FY 2634		FY 2635		FY 2636		FY 2637		FY 2638		FY 2639		FY 2640		FY 2641		FY 2642		FY 2643		FY 2644		FY 2645		FY 2646		FY 2647		FY 2648		FY 2649		FY 2650		FY 2651		FY 2652		FY 2653		FY 2654		FY 2655		FY 2656		FY 2657		FY 2658		FY 2659		FY 2660		FY 2661		FY 2662		FY 2663		FY 2664		FY 2665		FY 2666		FY 2667		FY 2668		FY 2669		FY 2670		FY 2671		FY 2672		FY 2673		FY 2674		FY 2675		FY 2676		FY 2677		FY 2678		FY 2679		FY 2680		FY 2681		FY 2682		FY 2683		FY 2684		FY 2685		FY 2686		FY 2687		FY 2688		FY 2689		FY 2690		FY 2691		FY 2692		FY 2693		FY 2694		FY 2695		FY 2696		FY 2697		FY 2698		FY 2699		FY 2700		FY 2701		FY 2702		FY 2703		FY 2704		FY 2705		FY 2706		FY 2707		FY 2708		FY 2709		FY 2710		FY 2711		FY 2712		FY 2713		FY 2714		FY 2715		FY 2716		FY 2717		FY 2718		FY 2719		FY 2720		FY 2721		FY 2722		FY 2723		FY 2724		FY 2725		FY 2726		FY 2727		FY 2728		FY 2729		FY 2730		FY 2731		FY 2732		FY 2733		FY 2734		FY 2735		FY 2736		FY 2737		FY 2738		FY 2739		FY 2740		FY 2741		FY 2742	
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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	PROJECT	D088
BUDGET ACTIVITY		PE NUMBER AND TITLE											
5 - Engineering and Manufacturing Development		0604619A Landmine Warfare											
D. Schedule Profile		FY 1997				FY 1998				FY 1999			
		1	2	3	4	1	2	3	4	1	2	3	4
Completed WAM PIP Command													
&Control Sub-system Preliminary Design													
Complete Contractor System Test													
WAM PIP Functional Configuration													
Completed													
Complete PIP preliminary technical test													
* Milestone Completed													

Project D088

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development		0604619A Landmine Warfare			D088
A. Project Cost Breakdown		FY 1997	FY 1998	FY 1999	
Primary Hardware Development		12840	11200	13492	
Test and Evaluation		6277	2850	4100	
Government Engineering Support		5833	4299	5097	
Government Program Management		405	400	500	
SBIR/STTR			440		
Total		25355	19189	23189	
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or	Contract				
Government	Method/Type				
Performing	or Funding				
Activity	Vehicle				
	Award or				
	Obligation				
	Date				
Product Development Organizations					
Textron	CPIF	June 1996			
Textron	CPIF	June 1990			
Support and Management Organizations					
ARDEC					
PM-MCD					
Other (Misc.)					
SBIR/STTR					
Test and Evaluation Organizations					
TECOM					
Government Furnished Property: None.					
Subtotal Product Development		138711	12840	11200	176243
Subtotal Support and Management		35920	6238	5139	52894
Subtotal Test and Evaluation		8022	6277	2850	21249
Total Project		182653	25355	19189	250386
Project D088		Page 4 of 4 Pages			Exhibit R-3 (PE 0604619A)

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604622A Family of Heavy Tactical Vehicles

COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		4906	4845	0	0	0	7792	7663	Continuing	Continuing
D659 Family of Heavy Tactical Vehicles		4906	4845	0	0	0	0	0	Continuing	Continuing
E49 Heavy Expanded Mobility Tactical Truck (HEMTT)		0	0	0	0	0	7792	7663	Continuing	Continuing

Mission Description and Budget Item Justification: Program element funds various heavy tactical vehicle capabilities to support combat and combat support missions. These missions include the following: line haul, local haul, unit resupply; and transporting water, ammo, and general cargo. FY98 funding supports requirements for a Trailer R&D program to demonstrate technologies that support the Army's objectives to minimize operational and support costs, while modernizing trailer systems that provide significant benefits to the Army warfighting capability. In FY02/03, Project E49 will provide the RDTE funding to support a competitive procurement of a new design Heavy Expanded Mobility Tactical Truck (HEMTT) to begin replacement of the current fleet. This program element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604622A Family of Heavy Tactical Vehicles

D659

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D659 Family of Heavy Tactical Vehicles	4906	4845	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Budget Item Justification: In FY97 this project supported requirements to develop expanded heavy tactical vehicle capabilities to meet the emerging needs of Army users through the HEMTT Extended Service Program (ESP) and Palletized Load System-Enhanced (PLS-E) initiative. The project will continue to develop and test the HEMTT ESP test bed vehicles to improve the readiness, maintainability, and safety of the HEMTT fleet through ESP. The PLS-E, a designated Warfighter Rapid Acquisition Program (WRAP) will provide critical positive control of transportation assets and all-weather capability, to provide force protection and rapid crisis response, and to track and shift critical assets to support the maneuver commander. This capability will be provided by the Movement Tracking System (MTS), which is a satellite-based tracking/communication system comprised of a personal computer with mobile and base units, global positioning system, two-way digital messaging capability, and the ability to track and control vehicles. In FY98 this project supports requirements for a Trailer R&D program to demonstrate technologies that support the Army's objectives to minimize operational and support cost, while modernizing trailer systems that provide significant benefits to the Army warfighting capability. This project seeks to demonstrate technologies that improve the efficiency and sustainability of the trailer fleet to meet current and future requirements. The project will focus on demonstrating and validating advanced technologies and horizontal technology insertion. The project will demonstrate general military utility and the ability to support current operations as well as Force XXI and the Army After Next (AA) tactical logistics operations

Acquisition Strategy: The strategy for HEMTT ESP is to develop and test prototypes of future requirements to determine producibility and feasibility of incorporating vehicles into future production contracts. Movement Tracking System (MTS) of the PLS-E is a Non-developmental Item (NDI) acquisition, using Commercial Off The Shelf (COTS) technology and components. First year procurement supports two prototype divisional and corps slices using Warfighter Rapid Acquisition Program (WRAP) RDTE funds. In FY98, the Army will continue the program with procurement funding. A competitive award is planned for 3QFY98.

FY 1997 Accomplishments:**HEMTT ESP**

- 49 Analysis of HEMTT ESP Areas of Opportunity (Phase I)
- 119 Analysis of Selected HEMTT ESP Alternatives (Phase II)
- 1032 Final HEMTT ESP Hardware Design/Build Test Bed Vehicles (Phase III)
- 706 Tested HEMTT ESP Test Bed Vehicles (Phase IV)

PLS-E

- 50 Developed technical specifications based upon COTS approach
- 150 Conducted Market Survey/ Identified commercial sources meeting best value criteria
- 2225 Equipped Prototype Division and Corps slices with MTS
- 300 Conducted combined Development and Operational Test

Project D659

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																																																		
BUDGET ACTIVITY	PE NUMBER AND TITLE																																																				
5 - Engineering and Manufacturing Development		February 1998	D659																																																		
<p>FY 1997 Accomplishments: (continued)</p> <ul style="list-style-type: none"> • 275 Evaluate impact on Digitized Force <p>Total 4906</p>																																																					
<p>FY 1998 Planned Program:</p> <p>Tactical and Support Vehicles (Trailers)</p> <ul style="list-style-type: none"> • 2600 Current and Future Tactical Operational Improvements • 370 Mobility and Deployment Enhancements • 758 System Safety Environment & Management • 995 Life Cycle Cost Reduction • 122 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR) cut <p>Total 4845</p>																																																					
<p>FY 1999 Planned Program: Project not funded in FY 1999</p>																																																					
<p>B. Project Change Summary</p> <p>FY 1998/1999 President's Budget Request</p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>Appropriated Value</td> <td>1958</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>2000</td> <td>5000</td> <td>0</td> </tr> <tr> <td>FY 99 President's Budget</td> <td>+2906</td> <td>-155</td> <td>0</td> </tr> <tr> <td></td> <td>4906</td> <td>4845</td> <td>0</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	Appropriated Value	1958	0	0	Adjustments to Appropriated Value	2000	5000	0	FY 99 President's Budget	+2906	-155	0		4906	4845	0																														
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Adjustments to Appropriated Value	2000	5000	0																																																		
FY 99 President's Budget	+2906	-155	0																																																		
	4906	4845	0																																																		
<p>Change Summary Explanation:</p> <p>Funding: FY 97 - Increase (+2906) is net result of -94 reprogrammed to higher priority requirements and an increase of 3000 reprogrammed from PE 0203758A/project 376 for Palletized Load System - Enhanced, a Warfighter Rapid Acquisition Program (WRAP).</p> <p>Funding: FY98 - Congressional increase for this project (+5000)</p>																																																					
<p>C. Other Program Funding Summary</p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>To</th> <th>Total</th> </tr> <tr> <th></th> <th>241417</th> <th>114340</th> <th>189617</th> <th>177838</th> <th>222563</th> <th>148869</th> <th>568257</th> <th>Compl</th> <th>Cost</th> </tr> </thead> <tbody> <tr> <td>OPA1 Family of Heavy Tactical Vehicles (DA0500)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cont</td> <td>Cont</td> </tr> <tr> <td>OPA1, D16103, Palletized Load System - Enhanced</td> <td>0</td> <td>2830</td> <td>2929</td> <td>2910</td> <td>2895</td> <td>3883</td> <td>3871</td> <td>Cont</td> <td>Cont</td> </tr> <tr> <td>OPA1, DV0021, HEMTT Ext Service Program</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>19048</td> <td>63173</td> <td>Cont</td> <td>Cont</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total		241417	114340	189617	177838	222563	148869	568257	Compl	Cost	OPA1 Family of Heavy Tactical Vehicles (DA0500)								Cont	Cont	OPA1, D16103, Palletized Load System - Enhanced	0	2830	2929	2910	2895	3883	3871	Cont	Cont	OPA1, DV0021, HEMTT Ext Service Program	0	0	0	0	0	19048	63173	Cont	Cont
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total																																												
	241417	114340	189617	177838	222563	148869	568257	Compl	Cost																																												
OPA1 Family of Heavy Tactical Vehicles (DA0500)								Cont	Cont																																												
OPA1, D16103, Palletized Load System - Enhanced	0	2830	2929	2910	2895	3883	3871	Cont	Cont																																												
OPA1, DV0021, HEMTT Ext Service Program	0	0	0	0	0	19048	63173	Cont	Cont																																												
<p>Project D659</p> <p>Page 3 of 6 Pages</p> <p>Exhibit R-2 (PE 0604622A)</p>																																																					

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604622A Family of Heavy Tactical Vehicles

D659

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
OPA1, Tactical and Support Vehicles (Trailers) (D02300,D04800,D04700)	4878	7125	15298	32195	39169	35856	56408	Compl Cont	Cost Cont

* Note: FY98 OPA1 funds for PLS-E are congressional plus-up as part of WRAP program.

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 1999
1	2	3	4	1	2	3

HEMTT ESP:

Test Bed Contract Award

Phase I (Analysis of Areas of Opportunity) - Complete

Phase II (Analysis of selected Alternatives) - Complete

Phase III Final Design & Fabrication of 2

Test Bed Vehicles - Complete

Phase IV Test - Complete

PLS-E

Award MTS Test Quantities

Conduct combined DT/OT

Initial fielding, Prototype Div/Corps Slices

Tactical and Support Vehicles (Trailers)

Tactical Trailers Operational Improvement

& Support Cost Reduction-Contract

Award

Phase I(Analysis of Areas of Opportunity)-

Complete

Phase II (Analysis of Selected Alternatives) - Complete

Phase III (Final Design & Fabrication of

Test Bed Vehicles (Component

Demonstrators) Complete

Phase IV Test - Complete

* Denotes Milestones Completed.

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

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PROJECT

5 - Engineering and Manufacturing Development

0604622A Family of Heavy Tactical Vehicles

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Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Support and Management Organizations:										
Science Applications International Corp (SAIC)	CPFF	Various				40			Cont	Cont
PEO STAMIS	1095/MIPR	Various			0	295			Cont	Cont
TACOM	1095/MIPR	Various			0	165			Cont	Cont
TACOM	1095/MIPR	Various					647		Cont	Cont
Test and Evaluation Organizations										
Oshkosh Truck Corp	SS/CP	Aug 97	206	206	0	206			Cont	Cont
TECOM	1095/MIPR	Various			0	800			Cont	Cont
TBD	TBD	Jul 98					396			
TECOM	1095/MIPR						1187			
Government Furnished Property: Not applicable										
Subtotal Product Development						3400	2615			
Subtotal Support and Management						500	647			
Subtotal Test and Evaluation						1006	1583			
Total Project						4906	4845			

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604633A Air Traffic Control								D586	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D586	Air Traffic Control	7086	4533	1737	2048	2113	2295	2412	0	Continuing	
<p>A. Mission Description and Budget Item Justification: This program element funds continuously evolving efforts for the development of Air Traffic Control (ATC) systems for both tactical and fixed base applications. It funds the integration and qualification of an Air Traffic Navigation, Integration, and Coordination System (ATNAVICS) and Mobile Tower System (MOTS). This system provides urgently needed communications and precision/non-precision approach and flight following capability in support of Army tactical airfields, remote landing zones, drop zones, pickup zones and temporary helicopter operating areas worldwide. MOTS automated tower system is designed to integrate with secure modernized aircraft communications. This is a non-developmental item (NDI) program. Fixed base ATC efforts funded by this line include Navigation Air Systems Modernization, Communication System Modernization and digitization of the ATC structure. The tasks in this Program Element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.</p> <p>Acquisition Strategy: The acquisition strategy is to procure an ATNAVICS prototype through a Cost Plus Fixed Fee (CPFF) contract for integration of electronic/radar components to include design, development, and testing of an integrated prototype over a three year period. An additional component of the strategy is to continue concept exploration and design definition of the MOTS.</p> <p>FY 1997 Accomplishments:</p> <p>ATNAVICS</p> <ul style="list-style-type: none"> 6734 Continue development of prototype 302 Developmental and Operational Testing <p>MOTS</p> <ul style="list-style-type: none"> 50 Pre-market analysis for state of the art systems solution <p>Total 7086</p> <p>FY 1998 Planned Program:</p> <p>ATNAVICS</p> <ul style="list-style-type: none"> 3624 Continue development of prototype 700 Development and Operational Testing <p>MOTS</p> <ul style="list-style-type: none"> 50 Market Analysis 50 Evaluation and Suitability Study and Cost Savings Data 109 Small Business Innovative Research/Small Business Technology Transfer Programs <p>Total 4533</p>											

Project D586

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DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604633A Air Traffic Control

D586

FY 1999 Planned Program:

MOTS

- 475 Refurbishment for Fielding
 - 360 Design Definition/Integration Analysis
 - 902 Procure Prototype System for Developmental Testing
- Total 1737

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
7377	1705	1729
7201	4705	
-115	-172	
7086	4533	1737

Change Summary Explanation:

Funding: (FY 97) -115 Reprogrammed to Higher Priority Requirements.

Funding: (FY 98) +3.0M appropriated by Congress to continue the ATNAVICS EMD phase. -172 Undistributed Congressional Adjustment.

C. Other Program Funding Summary

APA AA0050 - Air Traffic Control

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont'd	Total Cost Cont'd
13502	5671	5691	8911	38756	29574	34771		

D. Schedule Profile

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont'd	Total Cost Cont'd
1	2	3	4	1	2	3	4	

ATNAVICS System Performance

ATNAVICS Testing

MOTS Pre-Market Analysis (State of Art Syst Solution)

ATNAVICS Development/Operational Testing

MOTS Market Analysis

MOTS Evaluation and Suitability Study/Cost Savings Data

ATNAVICS Refurbishment for Fielding

MOTS Design Definition/Integration Analysis

Procure MOTS Prototype System for Development Testing

Project D586

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

PROJECT
D586

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604633A Air Traffic Control

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Engineering Support	212	100	50
Primary Hardware Development and Testing	6137	3189	1377
Program Management Support	381	435	310
Development Test and Evaluation	302	700	
Government Furnished Equipment	54		
SBIR/STTR		109	
Total	7086	4533	1737

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or

Government Method/Type

Performing Activity or Funding

Award or Obligation

Vehicle Date

Performing Activity EAC

Project Office EAC

Total Prior to FY 1997

FY 1997

FY 1998

FY 1999

Budget to Complete

Total Program

Raytheon CPFF Mar 96

Raytheon CPFF Dec 97

MOTS TBD Dec 99

Support and Management Organizations

Army Aviation &

Missile Command

(AMCOM)

CECOM

Test and Evaluation Organizations

Raytheon

TEXCOM/TECOM

SBIR/STTR

Project D586

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604633A Air Traffic Control

D586

Government Furnished Property

Contract

Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date
Product Development Property			
Support and Management Property: None			
Test and Evaluation Property: None			

Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
212	54			Cont	Cont

Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
13843	6191	3189	1377	Cont	1377
2756	593	535	360	Cont	360
16599	302	809	1737	Cont	1737
	7086	4533		Cont	

Subtotal Product Development					
Subtotal Support and Management					
Subtotal Test and Evaluation					
Total Project					

Project D586

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
5 - Engineering and Manufacturing Development		0604640A Advanced Command and Control Vehicle		DG27					
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG27 Future Command and Control Vehicle	7545	10532	0	0	0	0	0	0	113410

A. Mission Description and Budget Item Justification: The Command and Control Vehicle (C2V) is a highly mobile, survivable, and responsive tracked platform designed for use by battalion through corps battle staffs in heavy force operations. The C2V provides a reconfigurable (tailorable) command and control capability able to host both current and future command, control, communications, computer, and intelligence (C4I) systems. The C2V supports the Army's Force XXI/Digitization efforts and will be compatible with Army Tactical Command and Control Systems. The C2V began as a Desert Storm initiative in response to shortcomings in the current M577 Command Post Vehicle. The C2V is currently in Low Rate Initial Production (LRIP) and is appropriately placed in Budget Activity 5.

Acquisition Strategy: C2V approved for type classification and Low Rate Initial Production (LRIP) quantity of 46 vehicles in 4Q96. Based on the LRIP decision, the Army will procure 439 C2V vehicles. Follow-on Sole-Source/Firm Fixed Price & Cost Plus Incentive Fee contracts and Fixed Price with Options (FPO) contracts are in place for C2V Low Rate Initial Production (LRIP). C2V LRIP is focused on testing and production planning to meet Initial Operational Test and Evaluation (IOTE) and First Unit Equipped (FUE) in FY99.

FY 1997 Accomplishments:

- 901 Completed Technical Data Package
- 1911 Logistics Effort
- 512 Prototype Manufacturing
- 759 Completed Technical Testing
- 574 Continued Vulnerability/Survivability/Live Fire Testing
- 2309 Advanced Integrated Collective Protective System (AICPS) Development/Procurement
- 579 Project Management
- 7545
- Total

Project DG27

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DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
DG27

5 - Engineering and Manufacturing Development

0604640A Advanced Command and Control
Vehicle

FY 1998 Planned Program:

- 1964 Contractor Test Support; Perform Refurbishment/Rework of Test Vehicles
- 3415 Continue Vulnerability/Survivability/Live Fire Testing
- 2705 Complete Production Verification Testing
- 200 Project Management
- 2000 Test Program Set (TPS) Development
- 248 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
- Total 10532

FY 1999 Planned Program: Program not funded in FY99.

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY1999 President's Budget

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
7734	8867	0
7899	10867	
-354	-335	
7545	10532	0

Change Summary Explanation: FY98 increase of 1665 (+2000 Congressional increase for TPS development; -335 undistributed Congressional Adjustments).

C. Other Program Funding Summary

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To Compl	Total Cost
48766	30262	44241	88279	83028	71188	102798	Cont.	Cont.
	922	2481	2608	691	1503	1347	Cont.	Cont.

G84200 Command & Control Vehicle
GE0173 Spares (Initial) C2V

Project DG27

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
5 - Engineering and Manufacturing Development		DG27	
PE NUMBER AND TITLE		0604640A Advanced Command and Control Vehicle	
<u>D. Schedule Profile</u>		FY 1997	FY 1998
		1 2 3 4	1 2 3 4
Award LRIP Contracts	X*		
Complete Developmental/Technical Tests	X*		
Support to Task Force XXI	X*		
Complete Production Verification Test		X	
Complete Live Fire Test.			X
Complete Live Fire Test Report			X
* Milestone Completed.			

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604640A Advanced Command and Control

DG27

Vehicle

A. Project Cost Breakdown

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Design Engineering	5121	3964	
Prototype Manufacture	512		
Test	1333	6120	
Project Management	579	200	
SBIR/ STTR		248	
Total	7545	10532	0

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Contract

Government Method/Type

Performing or Funding

Activity Vehicle

Award or Obligation

Date

Performing Activity

EAC

Project Office

EAC

Total Prior to

FY 1997

FY 1997

FY 1998

FY 1999

Budget to Complete

Total Program

Product Development Organizations

United Defense LP

Other Contracts

Support and Management Organizations

TACOM

CECOM

US Army Europe

SBIR/STTR

Test and Evaluation Organizations

APG, YPG,

White Sands

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project DG27

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604641A Tactical Unmanned Ground Vehicle								DE47	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DE47	Tactical Unmanned Gnd Veh (TUGV)	2728	2604	2468	2428	2380	0	0	0	12608	

A. Mission Description and Budget Item Justification: The Army is the lead for this joint service program. The development of a Tactical Unmanned Ground Vehicle (TUGV) provides the commanders the ability to see the battlespace while at the same time reducing soldiers' exposure during dangerous reconnaissance, surveillance, target acquisition (RSTA) and Nuclear Biological and Chemical (NBC) detection missions. Performs as a force multiplier, eliminates trickle-down combat information, reduces the "fog-of-war" and fills the brigade intelligence gap. Most importantly, the TUGV will displace brigade and battalion commanders from the bottom of the combat intelligence food chain. Six unmanned systems per battalion, operating out front, provide a force multiplication capability where TUGV's report the nature of the terrain, find the enemy, locate obstacles, acquire targets, detect chemical vapors, and provide this information directly to those who need it the most--the battalion commander's battle staff. This project is OSD funded through Milestone II (3rd Qtr FY 99). This PE supports the critical transition of Defense Advanced Research Project Agency (DARPA) developed technologies to the Project Manager (PM) Unmanned Ground Vehicles/Systems so that they can be assessed (maturity, supportability, operationally) during user appraisals, packaged and readied for incorporation into the TUGV Engineering and Manufacturing Development (EMD) performance specifications. PE supports research efforts in the engineering, manufacturing and design phase of the acquisition cycle and is therefore placed in Budget Activity 5.

Acquisition Strategy: The Joint Project Office is following a disciplined Evolutionary Acquisition strategy. This strategy requires Horizontal Technology Integration (HTI) of emerging sensors, lasers, and command and control data link technologies so that the first generation TUGV will enable soldiers to perform dangerous RSTA, biological and chemical detection, and targeting missions from remote and safer locations. This program differs from traditional acquisition programs by incorporating an in-house Program Definition and Risk Reduction phase. Prototype systems are being built during this phase using state-of-the-art sensors, controlling actuators, low bandwidth communications, mission planning, and off-road navigation technologies. This Program Definition and Risk Reduction phase will produce a system and interface specifications and detailed analysis to demonstrate Milestone (MS) I exit criteria and facilitate Cost and Operational Effectiveness Analysis (COEA) studies. The program utilizes a TUGV Integrating Integrated Product Team (IIPT) approach. A full and open competition will be conducted at MS II to select a system prime contractor.

FY 1997 Accomplishments:

- 2728 Transferred mature technologies from DARPA Demonstration (Demo) II Program, to include incorporating mission planning capabilities into the TUV System Specification, porting automated route planning and stealth observation point planning algorithms for use with the TUV prototype, and porting the mission planning and control station to a portable unit. Supported User Appraisal activities with the US Army Infantry School, Ft. Benning, GA.

Total 2728

FY 1998 Planned Program:

- 200 Complete transfer of mature technologies from DARPA Demo II Program, quantify the detectable size of both positive and negative obstacles.
- 791 Upgrade SARGE vehicles for participation in MOUT exercise.

Project DE47

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DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604641A Tactical Unmanned Ground Vehicle

DE47

FY 1998 Planned Program: (continued)

- 500 Modeling and simulation and conduct COEA.
- 847 Finalizing performance specification; prepare EMD Milestone documentation.
- 200 Assess Demo III technology for insertion into specification.
- 66 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 2604

FY 1999 Planned Program:

- 2468 In compliance with Evolutionary Acquisition Strategy, identify and transition Technological Enhancement candidates from DARPA Demo III into TUGV EMD Specification.

Total 2468

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999	FY 1999
2823	2687		2663
2754	2687		
-26	-83		
2728	2604		2468

C. Other Program Funding Summary

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
11000	16500	11900	12700	12500	14300	14900		

OSD funding in PE 0603709D.

Note: Includes funding for other products.

D. Schedule Profile

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
1	2	3	4	1	2	3

Critical Tech Transfer - Contract Award

Complete Phase I User Appraisal

Initiate Milestone II Documentation

Initiate MOU preparation

Initiate analysis in support of COEA

Initiate Draft EMD RFP development

MOU participation

Assess Demo III technology

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604641A Tactical Unmanned Ground Vehicle								DE47	
<u>D. Schedule Profile</u>		FY 1997		FY 1998				FY 1999			
	1	2	3	4	1	2	3	4			
Finalize specification											
EMD MS II Decision									X		
Award EMD Contract (OSD funded)									X		
*Denotes completed effort											

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604641A Tactical Unmanned Ground Vehicle

DE47

A. Project Cost Breakdown

DARPA Technology transfer, integration, assessment & HTI

Total

FY 1997

2728

FY 1998

2604

FY 1999

2468

2468

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Contract

Government

Performing Method/Type

Award or Obligation

Date

Activity

Vehicle

Performing Activity

EAC

Project Office

EAC

Total Prior to

FY 1997

FY 1997

FY 1998

FY 1999

Budget to Complete

Total Program

Lockheed Martin

SUMMA

SAIC

Uwotahi

CAS

Nichols Research

Support and Management Organizations

WSMR

Ft. Benning

JSC

AMCOM RDEC

MOA

RSA, AL

Test and Evaluation Organizations: Not applicable

Government Furnished Property

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

SBIR/STTR

Total Project

Project DE47

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY			PE NUMBER AND TITLE								
5 - Engineering and Manufacturing Development			0604642A Light Tactical Wheeled Vehicle								
COST (In Thousands)			FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost			3409	0	0	0	0	0	0	3409	3409
DE40 High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) Prototype			2859	0	0	0	0	0	0	2859	2859
DE41 Armored Security Vehicle (ASV)			550	0	0	0	0	0	0	550	550

Mission Description and Budget Item Justification: This PE supports all Light Tactical Wheeled Vehicles such as the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV), HMMWV Extended Service Program (ESP), Commercial Utility Cargo Vehicle (CUCV) and the Armored Security Vehicle (ASV). In FY97, Project DE40 funds the RDT&E effort of the HMMWV Remanufacture Program and Project DE41 funds completion of the Armored Security Vehicle (ASV) R&D effort. This Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is, therefore, correctly placed in Budget Activity 5.

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604642A Light Tactical Wheeled Vehicle

DE40

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE40 High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) Prototype	2859	0	0	0	0	0	0	2859	2859

A. Mission Description and Budget Item Justification: The HMMWV is a lightweight, high performance, four-wheel drive, air transportable and air droppable, high mobility tactical wheeled vehicle. The HMMWV consists of a single chassis that can be adapted to any one of four models at Direct Support (DS) or General Support (GS) level. The four models include: Cargo/Utility, Armor, Ambulance and Shelter Carrier. FY 1997 funds the HMMWV Extended Service Program (ESP). The Program Manager, Light Tactical Vehicles initiated the Joint Army/Marine Corps HMMWV ESP program in FY 1995. The objective of the HMMWV ESP program is to extend the useful service life of the vehicle another 14 years and provide operational and safety improvements to the current fleet of vehicles. The remanufactured HMMWVs will have performance characteristics equal to or better than the original product. This will be achieved by a combination of component refurbishment and replacement. Components which have been improved during the evolution of the HMMWV will be incorporated in the remanufactured vehicles where technically and economically feasible.

Acquisition Strategy: The acquisition strategy for the HMMWV ESP is to develop a remanufacture package leading to a five year competitive multi-year production contract.

FY 1997 Accomplishments:

- 2600 Initiated Remanufacture Package - HMMWV ESP
- 259 Support Costs (Engineering/Quality/Matrix)
- Total 2859

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
2937	9909	39919
3000	0	
-141	0	
2859	0	0

Change Summary Explanation: Funding: FY98 reduction (-9909) due to Congressional adjustment. FY99 Funding redistributed pending program review.

Project DE40

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE		PROJECT			
5 - Engineering and Manufacturing Development		0604642A Light Tactical Wheeled Vehicle		February 1998		DE40			
C. Other Program Funding Summary		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total
OPA1 Hi Mob Multi-Purp Whld Veh (HMMWV)		161475	127955	12144	0	0	0	0	Cont
D15400									Cont
OPA1 HMMWV ESP (DV0230)				24832	59109	129394	138251	246845	Cont
D. Schedule Profile		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total
1		2	3	4	1	2	3	4	Cont
Award Contract (Reman Package)									
Release Production RFP (HMMWV ESP)									
Production Contract Award (HMMWV ESP)									
*Denotes Milestones Completed									

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604642A Light Tactical Wheeled Vehicle

DE40

A. Project Cost Breakdown

Product Development

Developmental Testing

Total

FY 1997

2859

FY 1998

0

FY 1999

0

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or

Government

Performing

Activity

Method/Type

or Funding

Vehicle

Award or

Obligation

Date

Performing

Activity

EAC

Project

Office

EAC

Total

Prior to

FY 1997FY 1997FY 1998FY 1999

Budget to

Complete

Total

Program

Product Development Organizations

In-House Eng

TACOM, MI

AM General

System Tech Spt

Support and Management Organizations - None

Test and Evaluation Organizations - None

259

2600

259

2600

Government Furnished Property - None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

2859

2859

2859

2859

Project DE40

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604642A Light Tactical Wheeled Vehicle								DE41	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DE41	Armored Security Vehicle (ASV)	550	0	0	0	0	0	0	550	550	

A. Mission Description and Budget Item Justification: The Armored Security Vehicle (ASV) is a turreted, lightly armored all-wheel drive combat support vehicle which will provide essential protection to selected Military Police units in highly exposed threat environments. The Military Police (MP) currently use the High Mobility Multi-Purpose Wheeled Vehicle. The ASV is required to provide improved ballistic protection, increased payload and NBC protection to the MP teams. The need for such a wheeled vehicle was highlighted by recent humanitarian missions such as Operation Restore Hope in Somalia and conflict in Bosnia. There is no other comparable system in the inventory which offers the ballistic protection, transportability and mobility of the ASV. Congress directed FY 1995 funding for this program under PE 0604328D to insure all services' needs were met. A joint service memorandum is in place.

Acquisition Strategy: The acquisition strategy for ASV awarded one prototype contract (Dec 95).

FY 1997 Accomplishments:

- 119 Developmental Testing
- 25 Engineering Support
- 406 Prototype Contract
- Total 550

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary

FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	0	0	0
Adjustments to Appropriated Value	550		
FY 1999 President's Budget	550	0	0

Change Summary Explanation: Funding: FY97 - Reprogrammed from Bridging 654804.DH01 and various projects under Operating Agency 5S to fund shortfall to contractual and test requirements (+550)

Project DE41

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604642A Light Tactical Wheeled Vehicle

PROJECT

DE41

C. Other Program Funding Summary

FY 1997FY 1998FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

Total

OPA1 Armored Security Vehicle (D02800)
OPA4 Initial Spares (PEO Other) (DS1000)

10804 94

10715
101

68

6743
74

9458

13325

10000

	Cost	Cont
1	100	100
2	100	100
3	100	100
4	100	100
5	100	100
6	100	100
7	100	100
8	100	100
9	100	100
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32	100	100
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34	100	100
35	100	100
36	100	100
37	100	100
38	100	100
39	100	100
40	100	100
41	100	100
42	100	100
43	100	100
44	100	100
45	100	100
46	100	100
47	100	100
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93	100	100
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95	100	100
96	100	100
97	100	100
98	100	100
99	100	100
100	100	100

D. Schedule Profile

1	2	FY 1997
		3

FY 1998	2	3	X
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FY 1999 3

PPQT Testing (ASV)

Production Contract Award (ASV)

X

Project DE41

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development		0604642A Light Tactical Wheeled Vehicle				DE41
A. Project Cost Breakdown						
Product Development		FY 1997	FY 1998	FY 1999		
		431				
Developmental Testing		119				
Total		550	0	0		
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or	Contract					
Government	Method/Type					
Performing	or Funding					
Activity	Vehicle					
	Award or					
	Obligation					
	Date					
Product Development Organizations						
TEXTRON (ASV	CPFF					
Prototype)	Dec 95					
In-House/Eng						
TACOM, MI						
Support and Management Organizations - None						
Test and Evaluation Organizations						
TECOM (APG)						
Government Furnished Property - None						
Subtotal Product Development						
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project						
		FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
		3052	406			3458
		624	25			649
				119		413
		3676	431			4107
		294	119			413
		3970	550			4520

Project DE41

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998						
BUDGET ACTIVITY		PE NUMBER AND TITLE								
5 - Engineering and Manufacturing Development		0604645A Armored Systems Modernization (ASM) - Engineering Development								
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		6408	0	4500	3000	6300	54820	109622	Continuing	Continuing
D022 Future Scout Vehicle (FSV)		0	0	0	0	4000	54820	109622	Continuing	Continuing
D175 Advanced Field Artillery System Multi-Option Fuze		6408	0	4500	3000	2300	0	0	0	48498

Mission Description and Budget Item Justification: This program element supports the Engineering and Manufacturing Development efforts for the Multi-Option Fuze for Artillery (MOFA) and the Future Scout Vehicle (FSV). MOFA will provide proximity, time, delay and point detonation functions for 105mm and 155mm bursting projectiles. The FSV will replace the current ground scout systems in the battalion/brigade and division/regiment levels. The projects in this program element support research efforts in the Engineering and Manufacturing Development phase of the acquisition cycle and are therefore correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604645A Armored Systems Modernization (ASM)

D175

- Engineering Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D175 Advanced Field Artillery System Multi-Option Fuze	6408	0	4500	3000	2300	0	0	0	48498

A. Mission Description and Justification This project finances the Engineering and Manufacturing Development phase of the Multi Option Fuze Artillery (MOFA). MOFA will provide proximity, delay, time and point detonation functions for 105mm and 155mm bursting projectiles. MOFA will be inductively set and is therefore critical to the Crusader 155mm self-propelled howitzer system automated ammunition handling capability, allowing Crusader to meet rate of fire (10-12 rounds/min) requirements. The Portable Inductive Artillery Fuze Setter (PIAFS) is being developed to allow non-Crusader equipped artillery units to inductively set the MOFA.

FY 1997 Accomplishments:

- 3898 Designed enhancements and updates
- 310 Portable Inductive Artillery Fuze Setter (PIAFS) Development
- 850 Continued program management and management engineering services
- 1350 Conducted PPQT testing XM773 and XM782 testing
- Total 6408

FY 1998 Planned Program: Project not funded in FY98

FY 1999 Planned Program:

- 1550 Design enhancements and qualification builds, XM782 (Contract Task VI)
- 1200 Portable Inductive Artillery Fuze Setter (PIAFS) Development
- 550 Program management and management engineering services
- 1200 Engineering test support, PPQT and PIAFS testing
- Total 4500

Project D175

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE	
5 - Engineering and Manufacturing Development		0604645A Armored Systems Modernization (ASM)	D175
- Engineering Development			
A. Project Cost Breakdown			
Product Development	FY 1997	FY 1998	FY 1999
Support and Management	4208		2750
Test and Evaluation	850		550
Total	1350	0	1200
	6408		4500
B. Budget Acquisition History and Planning Information			
Performing Organizations			
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC
Product Development Organizations			
Alliant Tech Sys Hopkins, MN	CPIF	May 92	22639
Raytheon/TI Joint Ventures, Tewksburg, MA	SS-CPFF	Mar 94	22639
TBD AMCCOM, ARDEC, Dover, NJ; Adelphi, MD	CPIF	Oct 99	22639
Support and Management Organizations			
AMCCOM, ARDEC, Dover NJ; Adelphi, MD			2915
Test and Evaluation Organizations			
TECOM, Yuma, AZ; APG; ARL; ARDEC; HAFB			1456
			1788
			19505
			1704
			550
			2000
			1788
			0
			800
			1400
			1400
			11390
			900
			5215
			1200
			1000
			5006
Government Furnished Property: None			
Project D175			

February 1998

0604645A Armored Systems Modernization (ASM)

- Engineering Development

0604645A

ARMORED SYSTEMS MODERNIZATION (ASM)

- ENGINEERING DEVELOPMENT

0604645A

ARMORED SYSTEMS MODERNIZATION (ASM)

- ENGINEERING DEVELOPMENT

February 1998

0604645A Armored Systems Modernization (ASM)

- Engineering Development

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ARMORED SYSTEMS MODERNIZATION (ASM)

- ENGINEERING DEVELOPMENT

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ARMORED SYSTEMS MODERNIZATION (ASM)

- ENGINEERING DEVELOPMENT

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- Engineering Development

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0604645A Armored Systems Modernization (ASM)

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0604645A Armored Systems Modernization (ASM)

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0604645A Armored Systems Modernization (ASM)

- Engineering Development

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ARMORED SYSTEMS MODERNIZATION (ASM)

- ENGINEERING DEVELOPMENT

February 1998

0604645A Armored Systems Modernization (ASM)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604645A Armored Systems Modernization (ASM)

- Engineering Development

PROJECT

D175

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	27919	4208	0	2750	3400	6150
Subtotal Support and Management	2915	850	0	550	900	1450
Subtotal Test and Evaluation	1456	1350	0	1200	1000	2200
Total Project	32290	6408	0	4500	5300	9800

Project D175

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604649A Engineer Mobility Equipment Development									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		44225	50585	63069	58914	39210	19294	0	0	336086	
DG15 DG15		1000	403	1492	0	0	0	0	0	3114	
DG25 M1 Breacher		31304	38521	51420	58745	39210	19294	0	0	244752	
DG26 Heavy Assault Bridge		11921	11661	10157	169	0	0	0	0	88220	
<p>Mission Description and Budget Item Justification: This Program Element (PE) supports the development of new, advanced combat engineer systems that will have mobility characteristics comparable to the maneuver forces supported. The programs included in this PE are the Grizzly (M1 Breacher) and the Wolverine (Heavy Assault Bridge). The Grizzly base vehicle is an M1 Abrams Tank chassis whereas the Wolverine base vehicle is the M1A2 SEP Abrams Tank chassis. The Grizzly will integrate a versatile/survivable full-width mine clearing blade with automatic depth control, a power driven arm, and an armored commander's control station on the chassis. The Wolverine will integrate a bridge capable of supporting Military Load Class (MLC) 70 loads and a software controlled launching mechanism. All projects in this PE support efforts in the Engineering and Manufacturing Development (EMD) phase of the life cycle acquisition strategy, and are correctly located in Budget Activity 5.</p>											

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment
Development

DG25

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG25 M1 Breacher	31304	38521	51420	58745	39210	19294	0	0	244752

A. Mission Description and Justification: The Grizzly (M1 Breacher) will provide the Combat Engineer with significantly improved mission effectiveness and crew/vehicle survivability while clearing minefields and removing complex natural and man-made obstacles at the forward edge of the battlefield. The Grizzly will be capable of moving with, and be as survivable as, the force it is supporting. The system provides a critical resource for executing in stride breaches, supporting the Force XXI maneuver commander's goals of information and maneuver dominance on the battlefield. The Grizzly, a single, survivable breach platform, gives the Combat Engineer a capability that does not currently exist in today's complex obstacle breaching operations, and will facilitate successful execution of ground combat mission requirements by maneuver forces. Funding in this phase supports vehicle system technical evolution to meet operational requirements prior to production, production planning, and government testing prior to a Milestone III decision. Additionally, funding supports the development of training devices. The Grizzly Training Aids, Devices, Simulators, and Simulations (TADSS) are the tools for life-cycle training of Grizzly operators, maintainers, and leaders. The Grizzly TADSS will support individual, collective and combined arms training at the institutional level and unit level. The computer-based TADSS will optimize training effectiveness at reduced institutional and unit OPTEMPO costs.

Acquisition Strategy: Research and development efforts have leveraged the accomplishments of the Combat Mobility Vehicle Advanced Technology Transition Demonstrator (CMV-ATTD) contract. Design modifications were written into the Advanced Development contract for the powertrain and other chassis components/systems necessary to insure that the Grizzly meets the mission profile required by the Operational Requirements Document. Through the production buy the vehicle will be sole sourced to United Defense Limited Partnership (UDLP), Ground Systems Division, York, PA. The contracts for training devices development and production will be awarded by STRICOM with maximum use of existing commercial off-the-shelf hardware and software.

FY 1997 Accomplishments:

- 24994 Performed Design Refinement and Prototype Refurbishment
- 4271 Conducted Logistics Analysis, Component Testing and Simulation
- 2039 Provided Government and Contractor Program Management to include Contract Administration, Sub-contracts Administration, Program Analysis, and Earned Value Management Systems (EVMS)
- Total 31304

Project DG25

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment

PROJECT

DG25

FY 1998 Planned Program:

- | | | |
|---|-------|--|
| • | 28848 | Complete EMD Vehicle Design and Rebuild Two Prototype Vehicles |
| • | 5413 | Perform Component Testing and Simulation and Accomplish Program Logistics Requirements |
| • | 468 | Procure System Support Package |
| • | 2826 | Provide Program Management |
| • | 966 | Small Business Innovative Research/Small Business Technology Transfer Programs |
| | 38521 | |
| | Total | |

FY 1999 Planned Program:

- | | | |
|---|-------|--|
| • | 6920 | Conduct Production Qualification Test I and Limited User Test |
| • | 13490 | Perform Component Testing and Simulation and Accomplish Program Logistics Requirements |
| • | 25336 | Continue Refinement of Design to Support Vehicle Production Configuration |
| • | 3220 | Provide Program Management |
| • | 2454 | Begin Design of TADSS |
| | 51420 | Total |

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

C. Other Program Funding Summary

RDTE, A Budget Activity 4

PE 0603649A. Project DG24. M1 Breacher AD

PA. WTCV. GZ3200. Breacher MOD

PA: WTCV. G84000. Breacher Trng Dev

PA, WTCV, GEO175, Breacher Spares

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
	34102	43748	51420
	33269	39748	
	-1965	-1227	
	31304	38521	51420

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To Compl</u>	<u>Total Cost</u>
498	0	0	0	0	0	0	0	72956
0	0	0	20569	79860	82460	119698	Cont'd	Cont'd
0	0	0	0	381	15031	1452	0	16864
0	0	0	0	0	0	2535	Cont'd	Cont'd

Project DG25

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February 1998

BUDGET ACTIVITY

PROJECT

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment

Development

D. Schedule Profile

FY 1999

Conduct Milestone II Review
Award Engineering and Manufacturing Development (EMD) Contract
EMD Preliminary Design Review (PDR)
EMD Critical Design Review (CDR)
Begin Prototype Rebuild
Award Contract for Training Devices
Begin Pre-Production Qualification Test (PQT) I

$$1 \text{ X}^*$$
 \bar{X}^* \bar{X}^*

X

X

X

*** Milestone Completed**

Project DG25

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE
February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
DG25

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment
Development

	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown			
Development Engineering	24994	28848	27790
Logistics Support	4079	4067	11958
System Test & Evaluation	192	1814	8452
Program Management	2039	2826	3220
SIBR/STTR		966	
Total	31304	38521	51420

B. Budget Acquisition History and Planning Information

Performing Organizations

Contract

Government

Performing

Activity

Method/Type

Award or

Obligation

Date

Performing

Activity

EAC

Total

Prior to

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Complete

Total

Program

Complete

Total

Program

Complete

Total

Program

Complete

Total

Project DG25

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)						DATE	February 1998	PROJECT		
BUDGET ACTIVITY		PE NUMBER AND TITLE				0604649A Engineer Mobility Equipment Development			DG25	
5 - Engineering and Manufacturing Development										
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Contract Spt to Program					130	410	120	840	310	1810
SIBR/STTR							966			966
Test and Evaluation Organizations										
TECOM								6790	20590	27380
APG, MD										
Government Furnished Property:										
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
Product Development Property										
Chassis GFM	Requisition	Mar 98				1581	187	1909	3677	
Test and Evaluation Property										
System Support Package	Requisition	Jul 98				468	130	130	728	
Subtotal Product Development				5402	27771	32573	36603	90778	193127	
Subtotal Support and Management				856	3533	5480	7897	5751	23517	
Subtotal Test and Evaluation						468	6920	20720	28108	
Total Project				6258	31304	38521	51420	117249	244752	

Project DG25

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Project DG25

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February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment Development

PROJECT

DG26

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG26 Heavy Assault Bridge	11921	11661	10157	169	0	0	0	0	88220

A. Mission Description and Justification: The Wolverine will provide Military Load Class (MLC) 70 vehicles the capability to cross 24-meter gaps (26-meter bridge). The Wolverine will have mobility characteristics comparable to the maneuver forces it will support. The launch time for the bridge will be five minutes or less; the retrieval time will be a total of ten minutes or less which includes five minutes to engage plus five minutes to place the vehicle in a travel mode. The base for the Wolverine is an M1A2 SEP Abrams Tank chassis. The Wolverine Training Aids, Devices, Simulators, and Simulations (TADSS) are the tools for life-cycle training of Wolverine operators, maintainers, and leaders. The Wolverine TADSS will support individual, collective, and combined arms training at the institution and unit level. The computer-based TADSS will optimize training effectiveness at reduced institutional and unit OPTEMPO costs.

Acquisition Strategy: Side-by-side Demonstration Testing was completed in FY 1993 on three different prototype bridges and launchers for Phase I of Engineering and Manufacturing Development (EMD). As a result of the testing and submission of proposals, one contractor, General Dynamics Land Systems Division (GDLS), was selected to complete Phase II of EMD with a Cost-Plus-Award-Fee contract. A contract was awarded in FY 1996 for two Wolverine systems, with an option for four additional systems exercised in December 1996 that will complete development testing. Follow-on Fixed Price contracts will be awarded for LRIP and Production requirements. STRICOM will award contracts for the development of training devices.

FY 1997 Accomplishments:

- 7773 Engineering Development Contract for migration to Abrams System Enhancement Program and Test Program Sets (TPS) development
- 622 Completion of EMD II Contract
- 1083 Completed PQT/Began Live Fire (Phase I)
- 21 Various Engineering Services Contracts
- 1902 Contractor Support of Test
- 520 Program Management
- Total 11921

FY 1998 Planned Program:

- 512 Contractor Support For Test
- 5787 Developmental Contract
- 602 Program Management
- 4064 Start Live Fire Test and Purchase System Support Package

Project DG26

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment Development

DG26

FY 1998 Planned Program: (continued)

- 403 Begin Design of Institutional Training Devices
- 293 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
- Total 11661

FY 1999 Planned Program:

- 1431 Contractor Support of Test
- 666 Developmental Contract and Refurbishment of Test Vehicles
- 501 Program Management
- 4926 Conclude Live Fire Test, Conduct Production Verification Test, and Support IOT&E
- 2633 Complete Design of Institutional Training Devices
- Total 10157

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999	FY 1999
12603	12033	10157	
12295	12033		
-374	-372		
11921	11661	10157	

C. Other Program Funding Summary

PA, WTCV, GZ3250, HAB MOD
PA, WTCV, GE0177, HAB Spares
PA, WTCV, G84600 HAB Training Devices

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
51401	41311	50401	68604	86469	106537	116476	Cont'd	Cont'd
0	911	859	1365	1415	1782	2083	Cont'd	Cont'd
0	0	386	15152	1260	1051	0	0	18534

Project DG26

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February 1998

PE NUMBER AND TITLE

0604649A Engineer Mobility Equipment Development

**PROJECT
DG26**

<u>D. Schedule Profile</u>		FY 1997		FY 1998		FY 1999	
1		2	3	1	2	3	4
	End PQT Testing	X*					
	Milestone IIIa (LRIP)	X*					
	Begin Live Fire/Vulnerability Test						
	Award Contract for Training Devices Dev						
	LRIP Contract Award						
	Production Readiness Review						
	Begin PVT						

*** Milestone Completed**

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604649A Engineer Mobility Equipment Development

DG26

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Development Engineering	7960	5855	3120
Logistics Support	456	335	179
System Test & Evaluation	2985	4576	6357
System Project Management	520	602	501
SBIR/STTR		293	
Total	11921	11661	10157

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Gen Dyn Land Sys	C-CPAF	Jan 94	NA	34701	34079	622				34701
Sterling Hgts, MI										
Gen Dyn Land Sys	SS-CPFF	Feb 96	NA	18326	4100	7773	5787	666		18326
Sterling Hgts, MI										
Gen Dyn Land Sys	SS-CPFF	Aug 96	NA	3845	0	1902	512	1431		3845
Sterling Hgts, MI										
SMS Corp	SS-PFP	May 92	NA	5798	5798					5798
St. Louis, MO										
Other Contracts	Various	Various	NA	945	924	21				945
Support and Management Organizations										
PMO Support		Oct 97		7322	5709	510	602	501		7322
ANAD				396	396					396
Anniston, AL										
PM STRICOM, Orlando, FL	MIPR	Oct 97		3211	6		403	2633	169	3211

Project DG26

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY					PE NUMBER AND TITLE							
5 - Engineering and Manufacturing Development					0604649A Engineer Mobility Equipment Development							
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program		
Other Gov't Agencies		Dec 97	EAC	EAC	1401	10				1411		
SBIR/STTR				NA			293			293		
Test and Evaluation Organizations												
TECOM				7313	1493	843	1546	3431		7313		
APG, MD												
ARL, MD				2054		240	944	870		2054		
WSMR				195	25			170		195		
White Sands, NM												
Government Furnished Property:												
Contract												
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program			
Product Development Property												
Various Gov't Sources	MIPR	Various		381					381			
Test and Evaluation Property												
To Be Determined	MIPR	Nov 97				1574	455		2029			
Subtotal Product Development												
Subtotal Support and Management												
Subtotal Test and Evaluation												
Total Project												

Project DG26

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DATE
February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	33970	35052	21311	19022	18992	27756	17842	Continuing	Continuing
DL69 Horizontal Technology Integration Second Generation FLIR (HTI SGF)	13217	11037	0	0	0	0	0	0	90233
DL70 Night Vision Devices Engineering Development	13631	12387	11333	19022	18992	27756	17842	Continuing	Continuing
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	7122	11628	9978	0	0	0	0	0	28728

Mission Description and Budget Item Justification: This program element provides night vision technologies required for U.S. defense forces to engage enemy forces twenty-four hours a day under conditions with degraded visibility due to darkness, adverse weather and battlefield obscurants. Developments and improvements to high performance night vision electro-optics, radar, laser, and thermal systems integration of related multi-sensor suites will enable near to long range target identification, acquisition and engagement to include significant fratricide reduction which will improve battlefield command and control in "around the clock" combat operations. Project DL69 is focused on inserting key Horizontal Technology Integration Second Generation Forward Looking Infrared (HTI SGF) (FLIR) thermal sensor technology into common battle groups. Project DL70 focuses on night vision electro-optical, laser, and other target identification and location equipment for use by individual soldiers and a variety of platforms. In addition to the Lightweight Laser Designator Rangefinder (a Warfighter Rapid Acquisition Program), this project includes HTI laser evaluation and assessment, and integrates individual sensors into a common architecture. Project DL74 focuses on a long range multi-sensor system utilizing Horizontal Technology Integration Second Generation Forward Looking Infrared (HTI SGF) (FLIR) thermal sensors and other technologies, for use by US Army scouts at extended ranges beyond the Abrams and Bradley capabilities. The LRAS3 will provide the scouts with their first reconnaissance and surveillance system with a twenty-four hour, all weather capability which is mounted or man-portable. The projects in this PE support development efforts in the engineering and manufacturing development phases of the acquisition strategy and therefore are correctly placed in Budget Activity 5.

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering

DL69

Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL69 Horizontal Technology Integration Second Generation FLIR (HTI SGF)	13217	11037	0	0	0	0	0	0	90233

A. Mission Description and Justification- Horizontal Technology Integration Second Generation Forward Looking Infrared (HTI SGF) (FLIR) will enable the Army to insert key thermal sensor technology into the highest priority forces [the M2A3/M3A3 Bradley Fighting Vehicle System (BFVS), the Long Range Advanced Scout Surveillance System (LRAS3), and the M1A2 System Enhancement Package (SEP) Abrams]. The HTI SGF will allow all vehicles in a common battle group to see the same thermal image. The HTI SGF development is in two parts: an "A" kit, which is specific to the vehicle and includes integration and installation; and a "B" kit, which includes the common FLIR sensor and display. Funds in this project will develop the "B" kit for all weapon systems employing the HTI SGF.

Acquisition Strategy: The common Second Generation FLIR sensor and display "B" Kit are being developed and fabricated using a competitively awarded cost plus award fee contract.

FY 1997 Accomplishments:

- 12031 Completed development and fabrication of SGF "B" kit for M1A2 SEP and M2A3/M3A3.
- 286 Completed sight level qualification testing of EMD prototypes for HTI SGF.
- 900 Aviation "B" Kit Trade Studies.
- Total 13217

FY 1998 Planned Program:

- 272 Support M1A2 SEP Vehicle Testing
- 545 Support M2A3/M3A3 Vehicle Testing.
- 8013 Fabricate SGF "B" Kits for LRAS3 test units.
- 1934 Finalize Ground SGF "B" Kit Interface Control Document/final specifications and conduct verification tests.
- 273 Small Business Innovative Research/Small Business Technology Transfer Programs.
- Total 11037

FY 1999 Planned Program: Project not funded in FY 1999

Project DL69

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PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

DL69

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997

18036

17603

-4386

13217

FY 1998

11477

11477

-440

11037

FY 1999

0

Change Summary Explanation:

Funding: FY97 (-5000) Congressional rescission of Aviation B Kit EMD funds. (+650) Funds programmed from within PE 0604710A (DL70 and DL74) for higher priority efforts.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
6.4 RDTE 0604710A, "A" Kit LRAS3 (DL74)	7122	11628	9978	0	0	0	0	0	28728
6.7 RDTE 0203735A, "A" Kit (D330)	38177	21277	0	0	0	0	0	0	59454
LRAS3 K38300 OPA2	0	0	0	44110	49022	46663	51577	Cont	Cont
WTCV G80717 M2A3/M3A3 Bradley "B" Kit	24180	16072	53014	54490	64104	64174	63100	Cont	Cont
WTCV GA0700 M1A2 SEP Abrams "A" and "B" Kit	0	0	0	2400	29451	51068	65280	Cont	Cont
WTCV GA0750 Abrams Upgrade "A" and "B" Kit	22951	84300	92406	59055	59114	34081	37460	Cont	Cont

The 0203735A program element funds the "A" kit portion of the HTI SGF development, for the M1A2 SEP Abrams Tank. WTCV funds the production tails for the Bradley and Abrams platforms.

D. Schedule Profile

	FY 1997	FY 1998	FY 1999
1 X*	2	3	4
Special In-Process Review for "B" Kit	X*		
Initiate M2A3/M3A3 Limited User Test			
Award Aviation Trade Studies			
Initiate M2A3 and M3A3 Vehicle Tests			
Initiate M1A2 SEP Vehicle Test			
Finalize ICD and Specs for Ground HTI "B" Kit			

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BUDGET ACTIVITY	PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development	0604710A Night Vision Systems - Engineering Development	DL69		
<u>D. Schedule Profile</u>				
		FY 1997	FY 1998	FY 1999
		1 2 3 4	1 2 3 4	1 2 3 4
			X*	
	Award LRAS3 HTI "B" Kit			
	Accept LRAS3 HTI "B" Kit			X
	*Milestone Completed			
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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development		0604710A Night Vision Systems - Engineering Development			DL69
A. Project Cost Breakdown		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
Primary Hardware Development		11260	10203	0	
Contractor Engineering/Trade Studies		900			
Government Engineering Support		746	395	0	
Project Management Support		311	166	0	
Small Business Innovative Research/Tech Transfer Programs.			273		
Total		13217	11037	0	
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or	Contract				
Government	Method/Type				
Performing	or Funding				
Activity	Vehicle				
	Award or				
	Obligation				
	Date				
	Performing				
	Activity				
	EAC				
Product Development Organizations					
Producibility	Various				
Contracts	March 94				
Texas Instruments,	C/CPAF				
McKinney, TX	July 94				
SADA II, SBRC	C/FP				
T&M Hughes, El	SS/T&M				
Segundo, CA	July 96				
LRAS3 "B" Kits	CPAF				
Trade Studies (3)	C/CP				
Support and Management Organizations					
Pgm Management					
ASARC Support	MIPR				
CECOM NVESD	MIPR				
SBIR/STTR					
Test and Evaluation Organizations: None. Technical/qualification tests are performed by contractor and all Operational Tests are funded by Host platforms.					
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total</u>
		<u>Project</u>	<u>Prior to</u>	<u>Budget to</u>	<u>Program</u>
		<u>Office</u>	<u>FY 1997</u>	<u>Complete</u>	
		<u>EAC</u>	<u>FY 1997</u>	<u>FY 1998</u>	
		3876	3876	0	3876
		62100	50356	2442	62100
		2116	2116	0	2116
		3556	1524	74	3556
		900	0	7687	7687
			900	0	900
			1313	166	1790
			250	0	250
			6817	395	7958
				273	273

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering

DL69

Development

Government Furnished Property: None

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	57872	12160	10203			80235
Subtotal Support and Management	8380	1057	834			10271
Subtotal Test and Evaluation						
Total Project	66252	13217	11037	0		90506

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PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

PROJECT

0604710A Night Vision Systems - Engineering Development

DL70

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL70 Night Vision Devices Engineering Development	13631	12387	11333	19022	18992	27756	17842	Continuing	Continuing

A. Mission Description and Justification: Night Vision Devices Engineering Development: This project develops and improves high performance night vision electro-optics, thermal and laser systems, and systems integration of related multi-sensor suites to enable near to long range target acquisition and engagement as well as improve battlefield command and control in "around-the-clock" combat operations. The Lightweight Laser Designator Rangefinder (LLDR) was approved as a two year Warfighting Rapid Acquisition Program (WRAP) initiative for which funding was provided (\$5000K) in FY97 to enter a thirty month Engineering and Manufacturing Development Phase. LLDR is a day/night manportable modular target location and laser designator system. The target location system combines a State-Of-The-Art "See Spot" Forward Looking Infrared (FLIR), eyesafe laser rangefinder, compass and vertical angle measurement, and global positioning system (GPS) and required processing capability to export target location data through a digital interface. The modular laser designator will be able to target enemy assets for laser-guided ground and air-launched munitions. LLDR will provide the artillery light forces with the capability to detect, recognize, identify, determine location and either digitally pass this information on to coordinate indirect fire or designate the target for precision destruction by smart munitions. Improvements to the Thermal Weapon Sight (TWS) and the Driver's Vision Enhancer (DVE) are developed under this project. The architecture for interoperability of sensors [Mini-Eye Safe Laser Infrared Observation Set (MELIOS), LLDR, Target Location Observation System (TLOS), Lightweight Video Reconnaissance System (LVRs), TWS, DVE, Long Range Advanced Scout Surveillance System (LRAS3), Synthetic Aperture Radar (SAR), Infrared Line Scanner (IRLS), Forward Looking Infrared (FLIR), visible imagers, hyperspectral cameras and Moving Target Indicator (MTI) radars] on the digital battlefield, will be developed through an integrated sensor suite program. This will facilitate the merging of existing sensor data for digital distribution within the Joint Technical Architecture-Army. Sensor data distribution activities include the development and promulgation of a common device architecture, and a computer-based system which will test the flow of data from the sensor, through a variety of computing devices and then out over the communications network. Activities also include the integration, testing and demonstration of multi-sensor systems and the integration of ground-based sensors into long-range surveillance systems. The multispectral target acquisition capabilities will be developed, evaluated and inserted incrementally into ongoing production efforts. Efforts include Image Intensified photo cathode development in support of an eye-safe laser system, and evaluation of the suitability and technology supporting a common, HTI, laser system which could be used in a variety of ground and air platforms. PROFILER targeting aid development will upgrade the AN/TQM-41 Meteorological Measuring Set by integrating radar and microwave satellite technology to provide "on demand" trajectory and target area weather conditions. This will increase the ability of artillery/rocket forces to project lethality further into the battlespace.

Acquisition Strategy: The development programs in this project are currently all based on competitive awards and under cost reimbursement type contract.

FY 1997 Accomplishments:

- 356 Completed development of TLOS-related prototypes incorporating results from COTS evaluation and studies.
- 1020 Conducted HTI Laser trade studies to support developmental/COTS/NDI Integration program.
- 1527 Completed development of DVE P3I prototypes, characterized DVE performance.

Project DL70

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604710A Night Vision Systems - Engineering Development	DL70	
<p>FY 1997 Accomplishments: (continued)</p> <ul style="list-style-type: none"> 1428 Provided TWS support to Land Warrior program and completed P3I efforts. 2576 Conducted limited user test on engineering prototype (EP) LLDR. Awarded LLDR EMD contract. 5000 Awarded LLDR WRAP option and commenced fabrication of 18 prototypes in support of an accelerated initial operational capability. 1724 Conducted integration and demonstration of sensor interoperability with MELIOS/LVRS. <p>Total 13631</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 3644 Continue development and integrate LLDR EMD models. 2696 LLDR WRAP Integration of prototypes onto HMMWV and BFIST platforms 2114 Conduct integration, test and evaluation of the sensor architecture to include data dissemination for multiple applications (TLDHS/USMC, BFIST, STRIKER). 2986 Development and integration of HTI tactical laser, including laser illumination, into multispectral target acquisition capabilities. 650 PROFILER Trade Studies 297 Small Business Innovative Research/Small Business Technology Transfer Programs <p>Total 12387</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 3510 Complete development, conduct technical tests and user operational evaluation of LLDR EMD models. 2567 Continue integration and technical tests of the sensor architecture (Aerial Common Sensor, TLDHS/USMC, BFIST, STRIKER, Land Warrior applique). 2887 Continue development and integration of HTI tactical laser, including laser illumination capabilities, onto Army platforms. 2369 Conduct Thermal Upgrade activities (prototype test and evaluation) to enhance combat effectiveness of TWS and DVE. <p>Total 11333</p>			

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PE NUMBER AND TITLE

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5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

DL70

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997

9283

9069

+4562

13631

FY 1998

9981

12781

-394

12387

FY 1999

11277

11333

Change Summary Explanation:

Funding:

FY97 (-420) Reprogrammed within PE 0604710A (DL69) for higher priority efforts (aviation trade studies), (+5000) LLDR WRAP Funding.
FY98 (-394K) Undistributed Congressional Reductions, (+2800) for LLDR WRAP Vehicle Integration.

Technical:

FY97: LLDR WRAP for 18 systems accelerated initial operational capability.

C. Other Program Funding Summary

Night Vision Devices KA3500 OPA2

Night Vision TWS K22900 OPA2

Night Vision LLDR K31100 OPA2

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
	100570	42241	29636	33408	29532	37638	36842	Continue	Continue
	45137	41079	36110	39638	40370	36168	38069	Continue	Continue
	0	0	0	6391	7410	7414	7594	Continue	Continue

D. Schedule Profile

FY 1997

1

2

3

X*

X*

X*

X*

X*

X*

X*

X*

X*

X*

X*

X*

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PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

DL70

D. Schedule Profile

FY 1997

FY 1998

FY 1999

1 2 3 4 1 2 3 4

Complete LLDR User Operational Tests
Sensor Architecture Test & Demonstration

X*

(MELIOS/LVRS)

Sensor Architecture Interoperability
Implementation on individual platform

Sensor Architecture Interoperability

Integration between multiple platforms

Initiate PROFILER Trade Studies

Complete PROFILER Trade Studies

Sensor Architecture Validation/Test

*Milestone Completed

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development	0604710A Night Vision Systems - Engineering Development			February 1998	DL70
A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999		
Primary Hardware Development	10276	9715	9009		
Contractor Engineering / Trade Studies	900	600	0		
Government Engineering Support	808	567	551		
Project Management Support	200	425	325		
Test and Evaluation	1447	783	1448		
SBIR/STTR		297			
Total	13631	12387	11333		
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or Government	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999
Performing Activity	EAC	FY 1997			
Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC			
Product Development Organizations					
Magnavox, Mahwah, NJ	C/CPIF Aug 93	8321	500		8321
Texas Instruments, McKinney, TX	C/CPIF Aug 93	11524	500		11524
Various (Studies and Prototypes)	C/CPIF 3Q96	2591	356		2947
Litton Laser, Apopka, FL	C/CP Aug 95	2556	0		2556
LLDR, Litton Lasers, Apopka FL	C/CP Jul 97		6900	3700	14030
Nichols Research, Huntsville, AL	C/CPIF 2Q96	1000	315	550	1315
HTI Laser Trade Studies (3)	C/CP 3Q97		1020		1020
Project DL70				Exhibit R-3 (PE 0604710A)	

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

DL70

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Multispectral target acq. Intevac, Santa Clara, CA	C/CPIF	1Q98					609		0	609
PROFILER Trade Studies	C/CP	2Q98					600	0	0	600
EOIR, VA	C/CP	2Q97			0	750	775	820	0	2345
California	C/CPIF	Mar 96			2000	835	429		0	3264
Microwave, MD										
Sensor Architecture (TBS)	C/CP	2Q98			0	0	400	541	Continue	941
HTI Laser	C/CP	2Q98					1802	2179	0	3981
Prototypes (TBS)										
Thermal Upgrades (TBS)	C/CP	2Q99						2369	Continue	2369
LLDR BFIST Veh. Integration (TBS)	C/CP	2Q98					1450			1450
Support and Management Organizations										
Project Mgmt					2555	200	425	325	Continue	3505
CECOM NVESD	MIPR				6038	733	492	476	Continue	7739
Other Support	MIPR				2305	75	75	75	Continue	2530
SBIR/STTR							297			297
Test and Evaluation Organizations										
OPTEC	MIPR				4719	974	355	983	Continue	7031
Oth. Gov't Agency	MIPR				1735	473	428	465	Continue	3101
Government Furnished Property: None										

Project DL70

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

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PE NUMBER AND TITLE

0604710A Night Vision Systems - Engineering

DL70

Total

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DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering

DL74

Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	7122	11628	9978	0	0	0	0	0	28728

A. Mission Description and Justification Project DL74 - Long Range Advanced Scout Surveillance System (LRAS3): This project will develop the Long Range Advanced Scout Surveillance System (LRAS3), which is a long range multi-sensor system for US Army scouts which will provide the capability to detect, recognize, identify, range and determine location of potential targets. Currently, US Army scouts do not have the necessary equipment to perform these functions "around the clock." LRAS3 will utilize the Horizontal Technology Integration Second Generation FLIR (HTI SGF) thermal sensor and will enable scouts to function "around the clock" in adverse weather and penetrate battlefield obscurants.

Acquisition Strategy: This project was awarded via competitive acquisition utilizing oral presentations and Cost as an Independent Variable (CAIV) for the Engineering and Manufacturing Development contract.

FY 1997 Accomplishments:

- 8 Milestone I/II IPR.
- 34 Conducted Proposal Evaluation for LRAS3.
- 7080 Awarded EMD contract design, develop and fabricate LRAS3 A-Kits.
- Total 7122

FY 1998 Planned Program:

- 8374 Continue EMD contract Development and Fabrication of LRAS3 A-Kits.
- 2199 Initiate Development Test (DT).
- 764 Initiate Test Equipment Development.
- 291 Small Business Innovative Research/Small Business Technology Transfer Programs.
- Total 11628

FY 1999 Planned Program:

- 1497 Complete Developmental Tests.
- 978 Conduct Operational Test.
- 4690 Complete Fabrication of LRAS3 EMD A-Kits.
- 2813 Complete Test Equipment Development.
- Total 9978

Project DL74

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PROJECT

5 - Engineering and Manufacturing Development

0604710A Night Vision Systems - Engineering Development

DL74

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
7551	11998	9978
7367	11998	
-245	-370	
7122	11628	9978

C. Other Program Funding Summary

0603774A D131 Budget Activity 4
6.4 RDTE 0604710A, B Kit (DL69)
LRAS-3 K38300 OPA2

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
2254	2848	2681	3015	3779	4568	4488	Continue	Continue
13217	11037	0	0	0	0	0	0	90233
0	0	0	44110	49022	46663	51577	Continue	Continue

D. Schedule Profile

Milestone I/II IPR
Award EMD Contract
Initiate fabrication of test units.
Complete Prototype A-Kit Development and Fabrication for DT
Initiate Development Test
Initiate Test Equipment Development
Complete Development Test
Complete Fabrication of A-Kits for IOTE
Initiate Operational Test
Complete Operational Test
Complete Test Equipment Development

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl
1	2	3	4	1	2	3	4
			X*				
			X*				
		X					
			X				
			X				
				X			
				X			
					X		
						X	
							X
							X

*Milestone Completed

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0604710A Night Vision Systems - Engineering Development

DL74

A. Project Cost Breakdown

Primary Hardware Development	FY 1997	FY 1998	FY 1999
Project Management Support	7080	10857	9057
Test and Evaluation	8	162	141
Government Engineering Support	0	0	500
SBIR/STTR	34	318	280
Total	7122	11628	9978

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--------------------------	--------------------------------	--------------------------	---------------------	-----	--------------------	------------------------	---------	---------	---------	--------------------	---------------

Product Development Organizations

Raytheon Systems	C/CPAF	Jul 97					3540	4623	3752	0	11915
Hughes	C/CPAF	Jul 97					3540	6234	5305	0	15079

Support and Management Organizations

Project Mgmt							8	162	141	0	311
CECOM NVESD	MIPR						34	318	280	0	632
SBIR/STTR								291			291

Test and Evaluation Organizations

TEXCOM	MIPR						0	0	200	0	200
TECOM	MIPR						0	0	300	0	300

Government Furnished Property: None

Subtotal Product Development							7080	10857	9057		26994
Subtotal Support and Management							42	771	421		1234
Subtotal Test and Evaluation							7122	11628	9978		500
Total Project											28728

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604713A Combat Feeding, Clothing, and Equipment									
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		73404	60053	62218	39201	40651	38326	38640	Continuing	Continuing	
DC40 Unit/Organizational Equipment		1701	1740	1720	1861	2736	2105	2563	Continuing	Continuing	
DL40 Clothing and Equipment		4525	3571	4351	3631	4548	4962	5009	Continuing	Continuing	
D548 Military Subsistence System		766	857	1300	1661	1794	1914	1930	Continuing	Continuing	
D667 Land Warrior		50628	37826	39960	16999	15757	13972	14179	Continuing	Continuing	
D668 Soldier Enhancement Program		15784	14114	14702	14866	14942	14805	14959	Continuing	Continuing	
D680 Mounted Warrior		0	1945	185	183	874	568	0	Continuing	Continuing	

Mission Description and Budget Item Justification: Supports Engineering and Manufacturing Development (EMD) and Non-Developmental Item (NDI) evaluation of unit/organizational equipment, weapons/munitions, clothing and individual equipment, fabric shelters, field service equipment, food and food service equipment to enhance soldier efficiency, effectiveness, lethality, sustainability and survivability. New food items and food service equipment will be developed to reduce food service logistics requirements for all four Services. The organizational equipment program supports development of a new generation of field service support items: small, large and collective protective shelters; decontamination items; and improved space heaters to shelter and sustain the soldiers in the field and improve quality of life. The Land Warrior program will produce the first fully integrated fighting system for dismounted combat soldiers. The Soldier Enhancement Program provides "soldier items" that can be procured in three years or less. The projects in this Program Element support research efforts in the Engineering and Manufacturing Development phase of the acquisition cycle and are therefore correctly placed in Budget Activity 5.

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Mission Description and Budget Item Justification: Supports Engineering and Manufacturing Development (EMD) and Non-Developmental Item (NDI) evaluation of unit/organizational equipment, weapons/munitions, clothing and individual equipment, fabric shelters, field service equipment, food and food service equipment to enhance soldier efficiency, effectiveness, lethality, sustainability and survivability. New food items and food service equipment will be developed to reduce food service logistics requirements for all four Services. The organizational equipment program supports development of a new generation of field service support items: small, large and collective protective shelters; decontamination items; and improved space heaters to shelter and sustain the soldiers in the field and improve quality of life. The Land Warrior program will produce the first fully integrated fighting system for dismounted combat soldiers. The Soldier Enhancement Program provides "soldier items" that can be procured in three years or less. The projects in this Program Element support research efforts in the Engineering and Manufacturing Development phase of the acquisition cycle and are therefore correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE							
BUDGET ACTIVITY		PROJECT							
5 - Engineering and Manufacturing Development		DC40							
PE NUMBER AND TITLE		0604713A Combat Feeding, Clothing, and Equipment							
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC40 Unit/Organizational Equipment	1701	1740	1720	1861	2736	2105	2563	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: Develop and field soft shelters, showers, latrines, heaters, mortuary affairs, organizational equipment and other combat service support equipment to improve unit sustainability and combat effectiveness.</p> <p>Acquisition Strategy: Accelerated developments that incorporate Low Rate Initial Production (LRIP) contracts for earlier transition to procurement.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 1701 Awarded integrated contract for development and procurement of the Laundry Advanced Systems (LADS) which replaces aging M85 Field Laundries on a 1:4 basis, incorporates a water recycle capability and minimizes waste product disposal in the field. <p>Total 1701</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 1000 Complete prototype development and conduct Developmental Test/Operational Test (DT/OT) of LADS prototypes. 447 Complete testing and field evaluation of the Modular General Purpose Tent Shelters (MGPTS) and prepare for MS III decision. 250 Conduct market investigation for Containerized Shower systems and subcomponents, fabricate NDI prototypes, and initiate Technical Testing. 43 Small Business Innovative Research/Small Technology Transfer Programs. <p>Total 1740</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 300 Develop frame and flooring systems as part of MGPTS P31. 861 Award developments contract for prototype air beam technology shelter. 125 Type Classify LADS and execute production phase of the contract. 109 Conduct market investigation for Small Unit Shower-Light systems and subcomponents, fabricate NDI prototypes, and initiate Technical Testing. 325 Complete Technical and Operational Testing on the Containerized Shower and Type Classify the Performance Specifications. <p>Total 1720</p>									

Project DC40

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0604713A Combat Feeding, Clothing, and

DC40

***Milestone Completed**

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5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

DC40

A. Project Cost Breakdown

Product Development	FY 1997	FY 1998	FY 1999
	1208	1251	1130
Support and Management	71	89	90
Test and Evaluation	422	400	500
Total	1701	1740	1720

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--------------------------	--------------------------------	--------------------------	---------------------	----------------	------------------------	---------	---------	---------	--------------------	---------------

Product Development Organizations

SSCOM	In-House				1159	468	359	320	Cont	2306
Guid	Various	Various			6332	740	892	810	Cont	8774

DDRV

Tech Rsch Grp

Hunter Mfg

GTS

ARO MIPR

OGA

Support and Management Organizations

SSCOM

Test and Evaluation Organizations

TECOM/ATC MIPR

CRIC

WSMR

Government Furnished Property: None

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0604713A Combat Feeding, Clothing, and Equipment

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DC40

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program Cont
Subtotal Product Development	7520	1208	1251	1130		Cont
Subtotal Support and Management	1293	71	89	90		Cont
Subtotal Test and Evaluation	3151	422	400	500		Cont
Total Project	11964	1701	1740	1720		Cont

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PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

DL40

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL40 Clothing and Equipment	4525	3571	4351	3631	4548	4962	5009	Continuing	Continuing

A. Mission Description and Justification: Develop state-of-the-art tactical and non-tactical clothing and equipment items to enhance the survivability, sustainment and mobility of the individual soldier.

Acquisition Strategy: Soldier Modernization will be accomplished via integrated acquisition programs embodying procurement approaches ranging from NDI/modified NDI through integrated programs. Acquisition strategies will vary from: 1) quick fixes in 36 months or less from concept to type classification (TC); 2) modular improvements which require more complex RDT&E and is usually completed in more than 36 months from concept to TC.

FY 1997 Accomplishments:

- 400 Completed Acquisition Strategy Report, Integrated Program Summary and forwarded Body Armor Set Individual countermeasure (BASIC) P3I RFP to contracting.
- 1175 Completed Developmental Test/Operational Test (DT/OT) and assessment reports, initiated redesign for the Improved Toxicological Agent Protective (ITAP). Conducted MS III and TC for the Joint Service Lightweight Integrated Suit Technology (JSLIST). Completed testing on Firefighters Integrated Suit-Combat (FISC).
- 2192 Awarded single RDTE contract for the Modular Body Armor and Modular Load System (MBA.MLS), conducted Explosive Ordnance Detachment (EOD) Suit domestic/foreign market survey and procured EOD suit prototypes.
- 173 Obtained Milestone I decision on the Optional Uniform Program concept. Procured test items and initiated field tests. Conducted Concept of Fit Study on Women's Dress Uniform.
- 202 Procured prototypes, conducted feasibility evaluation to modify patterns and size tariff, completed technical data for Integrated Sizing of the Battledress Uniform.
- 383 Program management.
- Total 4525

FY 1998 Planned Program:

- 768 Award contract for initial prototype and DT test items for BASIC P3I. Initiate DT/OT testing
- 1784 Fabricate test items and initiate the DT/OT of the MBA and MLS.
- 179 Procure prototypes for a wear test and acceptability evaluation of the Women's Coat, and Physical fitness Uniform

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5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and

PROJECT

DL40

FY 1998 Planned Program: (continued)

- | | | |
|-------|------|---|
| • | 577 | Complete redesign testing and staff MSIII document for ITAP |
| • | 176 | PM-Management |
| • | 87 | Small Business Innovative Research/Small Business Technology Transfer |
| Total | 3571 | |

FY 1999 Planned Program:

- 620 Complete DT/OT and assessment reports for the MBA and MLS and obtain MSIII approval.
- 305 Conduct a wear test and acceptability evaluation of the Women's Coats.
- 821 Modify designs, procure test prototypes, and initiate the DT/OT of the Combat Clothing Product Improvement.
- 900 Modify designs, procure test prototypes, complete DT/OT, obtain MS III approval of the Concealable Body Armor.
- 500 Complete test of the Advanced Bomb Suit, obtain MS III approval and transition to procurement.
- 1205 Develop initial designs, conduct early user evaluation, refine designs for Climate Control Equipment (heating and cooling) for the individual soldier.

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

C. Other Program Funding Summary:

C. Other Program Funding Summary:									
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603747.D669, Clothing & Equipment	2514	3236	3390	4158	3699	5261	5299	Cont	12202
RDTE, 064384BP.IP5, Individual Protection	5227	6023	9728	12078	17048	21910	13077	Cont	12202
DoD CBDP, MA0400, Protective Clothing	58825	35089	39188	40336	31228	38867	40264	Cont	12202
OMA, 114092000, Central Funding and Fielding	89572	49059	54958	79898	82414	84233	86032	Cont	12202

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PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

DL40

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed Acquisition Strategy Report; Forwarded RFP for BASIC P3I												
Completed DT/OT, initiated redesign ITAP		X*										
Completed MS III/TC JSLIST			X*									
Completed testing FIS-C; Staffed MSIII/TC trans to production			X*			X*						
Contract Awarded MBA/MLS			X*									
Obtained MSI on Opt Uniform Fabric. Initiated user tests. Completed				X*								
Concept of Fit Study												
Conducted feasibility eval, completed tech data.; forwarded to procurement center of						X*		X				
Integrated Sizing Battledress Uniform												
Awarded contract for prototypes and DT						X*		X				
Test items BASIC P3I. Initiated DT/OT testing.												
Procure test items/initiate DT/OT MBA/MLS							X					
Design modifications of maternity Uniforms, Men's and Women's dress items and all weather coats; test						X*	X			X	X	
prototypes and prepare for MS III												
Redesign & test ITAP, staff MSIII IPR documentation						X*		X		X		
Procure test items /initiate DT/OT BASIC P3I							X	X	X	X	X	

*Completed Milestones

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604713A Combat Feeding, Clothing, and Equipment	DL40	
A. Project Cost Breakdown			
Primary Hardware Development	FY 1997	FY 1998	FY 1999
	4525	3571	4351
Total	4525	3571	4351
B. Budget Acquisition History and Planning Information: Not applicable			

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BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
5 - Engineering and Manufacturing Development		0604713A Combat Feeding, Clothing, and Equipment		D548						
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D548	Military Subsistence System	766	857	1300	1661	1794	1914	1930	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: Engineering and Manufacturing Development (EMD) and Non-developmental Item (NDI) evaluation of food and food service equipment to enhance soldier efficiency and survivability. New food items and food service equipment will be developed to reduce food service logistics requirements for all four services. Development of Joint Service Food/Food Service Equipment to improve individual combat effectiveness and reduce logistics burden and Operation and Support costs of subsistence support for service men and women. Develop multi-fuel, rapidly deployable field food service equipment to support combat, humanitarian missions and operations-other-than-war. Improve equipment to enhance safety in food service, utilize battlefield fuels and decrease fuel and water requirements. Program is reviewed and validated twice annually by the DoD Food and Nutrition Research and Engineering Board as part of the Joint Service DoD Food Program.</p> <p>Acquisition Strategy: Developments transition to procurement.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 138 Completed design/development of Modern Burner Unit (MBU) interface components for integration into the Army Field Feeding System (AFFS). 320 Completed DT/EUOT&E and USAREUR Customer test, and developed performance specification for the Containerized Kitchen. 174 Procured, fabricated and evaluated a low cost safety improvements for the Mobile Kitchen Trailer (MKT). 134 Procured and evaluated electrification upgrades to Air Force field kitchens. <p>Total 766</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 420 Design/fabricate vented components and equipment to remove combustion by-products of the MBU. Develop component efficiency upgrades for field kitchens. 266 Conduct field evaluations of component improvements to the MKT. 50 Type classify the Containerized Kitchen and move to production and deployment phase. 100 Conduct field evaluations of commercially available squad stoves to improve subsistence capability in the field and transition to procurement. 21 Small Business Innovative Research/Small Business Technology Transfer Program <p>Total 857</p>										

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PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

D548

A. Project Cost Breakdown

Product Development	FY 1997	FY 1998	FY 1999
	455	613	836
Support and Management	59	44	64
Test and Evaluation	252	200	400
Total	766	857	1300

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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Product Development Organizations

SSCOM

GTS

Hunter Mfg

ATCOM

Support and Management Organizations

SSCOM

Test and Evaluation Organizations

TECOM/ATC

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

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BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
5 - Engineering and Manufacturing Development		0604713A Combat Feeding, Clothing, and Equipment		D667						
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D667	Land Warrior	50628	37826	39960	16999	15757	13972	14179	Continuing	Continuing

A. Mission Description and Justification: Land Warrior (LW) is an integrated fighting system for dismounted combat soldiers. The LW program will enhance the soldier's battlefield capabilities through the development and integration of an assortment of Army systems/components and technologies into a cohesive, timely, and combat effective system. These systems/components include: modular weapon system with thermal weapon sight, infrared aiming light, laser rangefinder, digital compass, video camera, and close combat optic; integrated headgear with helmet mounted display and image intensifier; enhancements to protective clothing and individual equipment; and an integrated individual soldier computer/radio. LW will bring the dismounted soldier into the digital battlefield.

Acquisition Strategy: The LW Engineering and Manufacturing Development (EMD) program is designed to field existing/mature technologies to meet soldier requirement deficiencies. The Force XXI Land Warrior program will develop advanced technology components for insertion into the LW consolidated program. An Integrated Product Team (IPT) was formed to determine which technologies from the Science and Technology (S&T) program will be integrated into the LW EMD program. An LRIP option, sole source contract, will be exercised to provide the required number of systems to meet the First Unit Equipped (FUE) date of 4Q00. A full production competitive contract will be awarded upon completion of successful Milestone III (1Q00).

FY 1997 Accomplishments:

- 7480 Fabricated LW prototypes for Development Testing (DT) and procure long lead items for Operational Testing.
- 12756 Conducted LW Early Operational Exercise (EOE), contractor and government testing, and prepare test support package.
- 9476 Fixed deficiencies resulting from Early Operational Exercise (EOE), contractor testing, finalize LW hardware/software design/integration, contract award fee. Ensured contractor and government compliance with Joint Technical Architecture-Army.
- 14120 Developed LW functional plans: Integrated Logistics Support (ILS), configuration management, etc., published LW draft system manuals; conducted risk reduction efforts and Preliminary and Critical Design Reviews.
- 6796 Program management and engineering support from other government agencies to provide oversight of contractor effort.
- Total 50628

FY 1998 Planned Program:

- 7756 Contractor program management, complete Production Qualification Test-Contractor (PQT-C); fix deficiencies, and conduct IV&V of software.
- 5100 Fabricate and deliver prototypes for PQT-Government and Initial Operational Test and Evaluation (IOTE) and to support Early User Test (EUT) which is Force XXI LW demonstration. Procure items and supplies for operational testing.

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PROJECT

5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and

D667

Equipment

FY 1998 Planned Program: (continued)

- 5610 Redesign/refurbish prototypes and additional test support to conduct 15-month test.
- 10281 Conduct technical testing, logistics demo, operational and maintenance training, conduct operational testing and functional configuration audit (FCA).
- 7382 Program management and engineering support from other government agencies to provide oversight of contractor effort. Write specifications for LW limited production contract.
- 750 Modify LW EMD contract to incorporate Joint Technical Architecture-Army Version 5.0 compliance. Modify LW EMD contract to incorporate the Joint Variable Message Format (VMF) IAW with ASARDA direction to achieve Joint Force Digital Common Interoperability.
- 947 Small Business Innovation Research/Small Business Technology Transfer Programs
- Total 37826

FY 1999 Planned Program:

- 15915 Complete operational testing and fix deficiencies from operational testing.
- 250 Ensure system compliance with Joint Technical Architecture-Army and conduct IV&V of software.
- 6840 Program Management and engineering support from other government agencies to provide oversight of contractor effort. Conduct technical and program reviews (PRR and LRIP IPR) and briefings to achieve LRIP decision. Develop/coordinate documentation of release of RFP and conduct SSEB to award LRIP contract.
- 5800 Begin EMD on technology insertion candidates for insertion into LW production baseline.
- 8770 Contractor program management and contract award fee.
- 2385 Small Business Innovation Research/Small Business Technology Transfer Programs
- Total 39960

B. Program Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 Presidents Budget	47893	33031	16965
Appropriated Value	48917	39031	
Adjustment to Appropriated Value	1711	-1205	
FY 1999 President's Budget	50628	37826	39960

Change Summary Explanation:

Funding: FY 98 - Funding increased (+4796) due to congressional plus up.

Funding: FY 99 - Program restructure, funding realigned from other PM Soldier programs (+22800)

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5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

D667

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
RDTE, 0603001.DJ50, Force XXI Land Warrior	18515	10948	9316	6423	6434	7669	7997	Compl	Cost
OPA 3, M80500, Land Warrior	0	0	51380	91460	100470	119198	111664	Cont	Cont
OPA 4, MS3610, Initial Spares-Land Warrior	0	0	0	207	241	257	256	Cont	Cont

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	
1	2	3	4	1	2	3	4	

Early Operational Experiment (EOE)

LW Preliminary Design Review (PDR)

LW CDR

Fabricate/Deliver DT prototypes

Contractor/Govt Production Qual testing

Fabricate/Deliver OT items

Operational Training

Operational Testing

Logistics Demonstration

LRIP IPR/Award

Early User Test

Milestone III/Production Award

* Milestone Completed

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A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
System Engineering and Program Management	1317	2350	1945
System Test and Evaluation	11919	7268	3665
Product Development	35009	26260	31965
Other RDTE Costs	2383	1948	2385
Total	50628	37826	39960

B. Budget Acquisition History and Planning Information:Performing Organizations

Contractor or Contract

Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Hughes	CPAF/Comp	Jul 95				43515	26260	29570	Cont	99345
RDECs	MIPR					3096	2929	2395	Cont	8420
NRDEC	MIPR				244					244
CECOM	MIPR									
TACOM (PM-SA)	MIPR									
ARL	MIPR									
Support and Management Organizations										
Congress							716	2385	Cont	Cont
Reduction										
SSCOM	FAD					2383	1232		Cont	Cont
PM Soldier	In-House				252	277	600	750	Cont	Cont
Modern Tech Corp	Task Order					1040	1750	1195	Cont	Cont
Test and Evaluation Organizations										
ARL-SLAD	MIPR					317	4339	3665	Cont	Cont
OPTEC	MIPR									
TECOM	MIPR									
IV&V Contractor	Task Order									

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BUDGET ACTIVITY		PROJECT	
5 - Engineering and Manufacturing Development		D667	
PE NUMBER AND TITLE		0604713A Combat Feeding, Clothing, and Equipment	
Government Furnished Property: None			
	Total		
	Prior to	Budget to	Total
	FY 1997	Complete	Program
			Cont
Subtotal Product Development	244	FY 1997	31965
Subtotal Support and Management	252	FY 1998	4330
Subtotal Test and Evaluation	496	FY 1999	3665
Total Project			39960

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COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D668 Soldier Enhancement Program	15784	14114	14702	14866	14942	14805	14959	Continuing	Continuing

A. Mission Description and Justification: The objective of the Soldier Enhancement Program (SEP) is to increase the lethality, command and control, sustainability, mobility, and survivability of the soldier through accelerated acquisition of lighter, more lethal weapons and improved "soldier items" including lighter, more comfortable load-bearing equipment, field gear, survivability items, communications equipment, and navigation aids. For SEP purposes, soldiers are managed in three categories: dismounted soldiers, combat crews (air and ground), and other soldiers. Projects generally take three years to complete.

Acquisition Strategy: SEP procurement consists of Non-Developmental Items (NDI) or modified NDI that can be fielded in three years or less. Items that require more than three years development are pursued under the appropriate system area. SEP items are reviewed and approved for development one year and begin development during the next year. Procurement varies by appropriation.

FY 1997 Accomplishments:

- 1732 Completed development/type classification: Modular Weapon System, M4 Improved Buttock, Shoulder Holster for 9MM Pistol (Left/Right Handed), Lightweight Chemical Overgarment, Shin/Knee Guards for Riot Control, Combat Medic Vest, Compression Sack, Improved Flotation Device, Small Unit Shower, Individual Soldier Radio and Blacklight.
- 3633 Continued development/procured prototypes and/or test: Non-Lethal 40MM Grenade, Non-Lethal 5.56MM Cartridge, XM 25 Stabilized Binoculars, Machine Gun Optics, Anti-Reflection Device, XM94 Stun Grenade, Mid Sized Riot Control Dispenser and Fighting Position Revetment.
- 7186 Initiated market surveys and/or developed: Heavy Sniper Weapon System, M249 Flexmount, Weapon Flashlight, Iron Sight, Close Quarters Battle Sling, 12 Gauge Non-Lethal Point and Crowd Control, 40mm Canister Rounds, IR Illumination Hand Grenade, M249 Feed Tray Cover, M4 Improved Buttock, Blast Protective Boots, Knee and Elbow Pads, Ballistic Shin Guards, Equipment Belt Extender, Improved Underlying Insulating Layers for Extended Cold Weather Clothing System (ECWCS), Extreme Cold Weather Boot, Ballistic/Non-Ballistic Face and Body Shield, Fuel Bar, Modular Load Bearing Equipment, Low Profile Flotation Collar, and Emergency Breathing Device, Tuff Ties, MP Combat/Law Enforcement Ensemble, Improved Combat Shelter, Multi Purpose Cart, and Canteen Insert Water Purifier.
- 793 Terminated/Suspended/On-Hold: Canteen Cup Cooler, On the Move Hydration, Alternate Wear Hot Weather Boot, Physical Fitness Uniform, Enhanced Incendiary Grenade, Weapons Flashlight, Accessory Shotgun for Rifles/Carbines, and Boreights for Aimlights and Thermal Systems (BATS).
- 2440 Program Management.
- Total 15784

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5 - Engineering and Manufacturing Development	0604713A Combat Feeding, Clothing, and Equipment	D668	
FY 1998 Planned Program:			
• 3154	Complete development/type classify: Anti-Reflection Device, M249 Feed Tray Cover, M4 Improved Buttstock, Close Quarters Battle Sling, Iron Sight, Machine Gun Optics, Non-Lethal 40MM Grenade, 5.56MM Non-Lethal Cartridge, XM94 Stun Grenade, XM25 Stabilized Binoculars, Blast Protective Boots, Knee and Elbow Pads, Ballistic Shin Guards, Equipment Belt Extender, Improved Underlying Insulating Layers for ECWCS, Extreme Cold Weather Boot, Ballistic/Non-Ballistic Face and Body Shield, Fuel Bar, Low Profile Flotation Collar, Tuff Ties, MP Combat/Law Enforcement Ensemble, Multi Purpose Cart, Emergency Breathing Device, Fighting Position Revetment and Mid Sized Riot Control Dispenser.		
• 3258	Continue development/procure prototypes and/or test: Heavy Sniper Weapon System, 12 Gauge Non-Lethal Point and Crowd Control, 40MM Canister Round and IR Illumination Hand Grenade, Improved Combat Shelter, and Canteen Insert Water Purifier.		
• 5469	Initiate market surveys/development: 12 Gauge Breaching Round, M203 Enhanced Fire Control System, Tactical Cartridge for Long Range Sniper Rifle, Lightweight Fragmentation Hand Grenade, Short Barrel M249 Light Machine Gun, Machine Gun Assault Bag, Collapsible Grappling Hook, Aviator Cable Tether, Micro Rappel System, Protective Gloves, Advanced Protective Eyewear System (APES), Ballistic Helmet Weight Reduction, Multi Purpose Cart (Pack Rat), and Low-Profile Lightweight (LPLW) Voice Amplifier.		
• 1771	Program Management.		
• 125	On Hold: Boreights for Aimlights and Thermal Systems IBATS).		
• 337	Small Business Innovative Research/Small Business Technology Transfer Programs.		
Total	14114		
FY 1999 Planned Program:			
• 2041	Complete development/type classify: 12 Gauge Non-Lethal Point and Crowd Control, 40MM Canister Round, Short Barrel M249 Light Machine Gun, Advanced Protective Eyewear (APES), Multi Purpose Cart, Collapsible Grappling Hook, Improved Combat Shelter, Protective Gloves, Micro Rappel System, Low Profile Lightweight (LPLW) Voice Amplifier and Canteen Insert Water Purifier.		
• 4899	Continue development/procure prototypes and /or test: Heavy Sniper Weapon System, 12 Gauge Breaching Round, IR Illumination Hand Grenade, Long Range Sniper Cartridge, M203 Enhanced Fire Control System, and Lightweight Fragmentation Hand Grenade.		
• 5743	Initiate market surveys/development on new items to commence in FY 1999.		
• 1940	Program Management.		
• 79	Boreights for Aimlights and Thermal Systems (BATS).		
Total	14702		

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Equipment

B. Project Change Summary

FY 1997	FY 1998	FY 1999
21146	14563	14645
21598	14563	
-5814	-449	
15784	14114	14702

Change Summary Explanation: FY1997 funding (-5814) reprogrammed to support higher priority requirements.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement, Army BA 3		1670	4832	4237	4676	3809	3801	Cont	Cont
MA6800, Soldier Enhancement									
WTCV, GC0076, Small Arms (SEP)	5338	4095	5233	5299	3601	310	2144	Cont	Cont
WTCV, GZ1290, Squad Automatic Weapon Mods				8461	10817	7951	7478	Cont	Cont
WTCV, GZ2800, M16 Rifle Mods	4907	4669	6241						15817
WTCV, GB3007, M4 Carbine Mods	4494	4886	5149	5401					19930
WTCV, G01500 Sniper Rifle, XM107, .50Cal				1200	3300	2300			6000
WTCV, GC0925, Mods	627	178	1128	1022	1008	1291	1290	Cont	Cont
PAA, F47500, 7.62mm AP	1996	1949	1926	1937	1929	3829	1898	Cont	Cont
PAA, F47600, 5.56mm AP	1996	1933	1926	1917	1909	1900	1889	Cont	Cont
PAA, F00900, 40mm Canister							5690		5995
PAA, E84900, XM84 Stun Grenade			1265	1792	2410	2441			7908
PAA, E82500, 12 Gauge Non-Lethal Point & Area	113								113
PAA, E91100, 5.56MM Non-Lethal Point & Area			3260	4310	6508	6653			20731
PAA, E89000, 40MM Non-Lethal		1213	1639	1598	1928	2011			8389
Other Procurement, Army BA 2		974	4593	3395	4500	5286	6317	Cont	Cont
BA5300, Soldier Enhancement (C/E)									
K30800, LWVRS	2589	4336	3364	4006	1233	1377	1419	Cont	Cont
OMA, 114092000, Central Funding and Fielding	89572	49059	54058	79898	82414	84233	86032	Cont	Cont

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D. Schedule Profile:

	FY 1997	
1	2	3
	X*	

SEP Requirements Reviews
SEP Projects Reviews

***Milestone completed**

Note: Numerous individual projects are ongoing under the Soldier Enhancement Program (SEP) and each project has its own milestone schedule.

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604713A Combat Feeding, Clothing, and Equipment	D668	
A. <u>Project Cost Breakdown</u>			
Soldier Enhancement Program	FY 1997	FY 1998	FY 1999
	15784	14114	14702
Total	15784	14114	14702
B. <u>Budget Acquisition History and Planning Information:</u> Not applicable			
Project D668		Exhibit R-3 (PE 0604713A)	

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0604713A Combat Feeding, Clothing, and Equipment

D680

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D680 Mounted Warrior	0	1945	185	183	874	568	0	Continuing	Continuing

A. Mission Description and Justification: Mounted Warrior (MW) is an integrated modular system that will enhance the combat crewman's fighting capabilities. The MW system will be used by a wide variety of combat crewmen and will be tailored based on Mission, Enemy, Terrain/Weather, Troops Available and Time (METT-T). The physical burden imposed by cumbersome personal equipment can degrade a crewman's effectiveness by increasing rates of fatigue, reducing mobility and restricting his ability to perform mission functions. Consideration will be given to optimizing the balance between vehicle mounted and crewman mounted equipment and designing an overall system that will improve the crewman's endurance, safety, mission performance and crewman/vehicle interface. The MW system will provide hands free, tetherless communications; increased laser eye protection; maximum individual protection from Nuclear, Biological, and Chemical (NBC) contamination, spall, flame and heat, and better performance of crew tasks without reducing tactility and agility.

Acquisition Strategy. The MW program fields currently existing/mature technologies to meet the needs of the Combat Vehicle Crewman (CVC).

FY 1997 Accomplishments: Project not funded in FY 97

FY 1998 Planned Program:

- 393 Conduct trade off determinations and analysis to identify near and far term products and technologies.
- 788 Leverage Land Warrior components for concept experimentation.
- 342 Procure hardware to support early concept experimentation program of MW unique components.
- 373 Program Management and engineering support for program and requirements definition and documentation.
- 49 Small Business Innovation Research/Small Business Technology Transfer programs.
- Total 1945

FY 1999 Planned Program:

- 185 Program Management and engineering support for program and requirements definition and documentation
- Total 185

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5 - Engineering and Manufacturing Development

0604713A Combat Feeding, Clothing, and Equipment

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B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997

0

FY 1998

2007

2007

-62

1945

FY 1999

4494

185

Change Summary Explanation: Funding: FY99 funds (-4294) realigned to higher priority requirements.

C. Other Program Funding Summary

FY 1997

0

FY 1998

0

FY 1999

0

FY 2000

0

FY 2001

0

FY 2002

2394

FY 2003

4298

Total

Cost

Cont

D. Schedule Profile

1

FY 1997

2

3

FY 1998

2

3

FY 1999

4

1

FY 1999

2

3

4

To

Compl

Cont

Total

Cost

Cont

Capstone Requirements Document

Approval

Milestone I Decision

Early Operational Evaluation components

Operational Reqs Document Approval

Milestone II Decision

Development Contract Award

Fabricate MW prototypes for DT/OT

X

X

X

X

X

X

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<u>A. Project Cost Breakdown</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Program Management	0	297	175
System Engineering and Early Prototype Development		1535	
Other RDTE Costs		113	10
Total		1945	185

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Contract

Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--------------------------------------	--------------------------------------	--------------------------------	-------------------------------	--------------------------	------------------------------	---------	---------	---------	-----------------------	------------------

Product Development Organizations

Contractor-TBD CPIF/Comp

RDEC Support MIPR

Support and Management Organizations

SSCOM FAD

PM Soldier In-House

RDEC Support

Test and Evaluation Organizations

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

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BUDGET ACTIVITY										PE NUMBER AND TITLE	
5 - Engineering and Manufacturing Development										0604715A Non-System Training Devices - Engineering Development	
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
Total Program Element (PE) Cost	46142	82965	64035	60445	48945	41235	53132	Continuing	Continuing		
D241 Non-System Training Devices Combined Arms	33455	67229	48661	44505	33081	24369	36244	Continuing	Continuing		
D396 WARSIM Intel Module (WIM)	2650	5490	4660	4356	4050	5265	5516	Continuing	Continuing		
D573 STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD) Support	10037	10246	10714	11584	11814	11601	11372	Continuing	Continuing		

Mission Description and Budget Item Justification: Program Element funds engineering development of Non-System Training Devices to support force-on-force training at the Combat Training Centers (CTC), general military training and training on more than one item/system, as compared with system devices which are developed in support of a specific item/weapon system. Training devices and training simulations help to modernize the forces while providing force multipliers that improve combat effectiveness by providing realistic training while helping to control rapidly escalating costs. Training devices maximize the transfer of knowledge, skills, and experience from the training situation to a combat situation. Force-on-force training at the National Training Center (NTC), Ft. Irwin, CA; Joint Readiness Training Center (JRTC), Ft. Polk, LA, and Combat Maneuver Training Center (CMTC), Hohenfels, Germany; and battle staff training in Battle Command Training Program (BCTP) will provide increased combat readiness through realistic collective training in low, mid, and high intensity scenarios. Project D241, Non-System Training Devices-Combined Arms, develops simulation training devices for Army-wide use, including the CTCs. Project D396, WARSIM Intel Module, is the intelligence driver for Warfighter Simulation 2000 (WARSIM). Project D573, STRICOM/Naval Air Warfare Center Training Systems Division (NAWCTSD) Support, funds in-house costs of project support by US Army Simulation, Training and Instrumentation Command (STRICOM) and NAWCTSD. This Program Element supports research efforts in the engineering and manufacturing development phase of the acquisition cycle and is therefore correctly placed in Budget Activity 5.

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5 - Engineering and Manufacturing Development

0604715A Non-System Training Devices -
Engineering Development

D241

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D241 Non-System Training Devices Combined Arms	33455	67229	48661	44505	33081	24369	36244	Continuing	Continuing

A. Mission Description and Justification: D241 - NSTD Combined Arms: This project is used to develop prototype training devices to support Combined Arms (Infantry, Armor, Aviation, Air Defense, Artillery, Engineer, Chemical, and Support troops) training and multi-system training within the Army, to include the Reserve Components. Corps Battle Simulation (CBS) is the Army's standard command and staff training simulation at the corps/division level. WARSIM will be the next generation battle simulation to replace CBS, Brigade/Battalion Battle Simulation (BBS), Tactical Simulation (TACSIM) and Combat Service Support Training Simulation System (CSSTSS). WARSIM will utilize current technology to efficiently provide training support and linkage to other simulations and simulators. WARSIM will comply with Simulation Interoperability Standards Organization (SISO) standards and open architecture to meet the Army's training requirements into the next century, to include High Level Architecture (HLA) compliance. WARSIM is also the land component element of the Joint Simulation System (JSIMS), which is a joint initiative managed by the JSIMS Joint Program Office. The Fire Support Combined Arms Tactical Trainer (FSCATT) provides for initial and sustainment gunnery training, and can be linked as part of the CATT family. FSCATT is designated as the Army's only Defense Acquisition Pilot Program IAW the Federal Acquisition Streamlining Act (FASTA). The Engagement Skills Trainer (EST) provides individual and squad level home station training with a deployable small arms engagement trainer, resulting in a significant savings in ammunition costs. This project funds the development of training devices, simulators, simulations and instrumentation for the Combat Training Centers (CTC's); Joint Readiness Training Center Military Operations in Urban Terrain (JRTC MOUT) for training in a realistic MOUT environment; Combat Training Center Opposing Forces (OPFOR) Surrogate Tracked Vehicles (STV) modernization to simulate the T-80 Main Battle Tank at the NTC, JRTC and CMTC; National Training Center Objective Instrumentation System (NTC OIS) to provide a completely digital based system for full tactical system connectivity and Distributed Interactive Simulation (DIS) compatibility. The Combat Synthetic Training Assessment Range (CSTAR) is a battle command training system that provides collective training for brigade-sized organizations at the National Training Center. CSTAR was approved as a two year Warfighting Rapid Acquisition Program (WRAP) effort. Devices developed will enable the Army to train units collectively to obtain synergistic results through the employment of weapons and support systems in their respective battlefield roles.

Acquisition Strategy: Competitive development efforts leading to competitive procurement against performance specifications.

FY 1997 Accomplishments:

- 22120 Continued development of WARSIM 2000 to include System Requirements Analysis, Software Requirements Analysis and System Design.
- 4365 Completed development of FSCATT Phase I.
- 3204 Continued limited enhancements to CBS.
- 2650 Continued development of devices, simulators and simulations to support training at Combat Training Centers to include JRTC MOUT Phase II.
- 1116 Initiated development of Combat Synthetic Training Assessment Range.
- Total 33455

Project D241

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
5 - Engineering and Manufacturing Development	0604715A Non-System Training Devices - Engineering Development	D241																					
<p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 38452 Complete Spiral Build 1 and approximately 50% of Spiral Build 2 software development for WARSIM 2000. 1046 Initiate development of Engagement Skills Trainer. 15123 Continue development of devices, simulators and simulations to support training at Combat Training Centers to include JRTC MOUT Phase II (3025), CTC OPFOR Tracked Vehicles (9880), NTC OIS (1947) and CTC Digitization (271). 2310 Continue limited/high priority refinements to CBS Source Code, to support major training exercises (i.e., Prairie Warrior). 3387 Continue the Battle Lab Reconfigurable Simulator. 5226 Continue development of Combat Synthetic Training Assessment Range. 1685 Small Business Innovative Research/Small Business Technology Transfer Programs. Total 67229 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 34568 Complete Spiral Build 2 and majority of Spiral Build 3 software development for WARSIM 2000 and deliver software required for JSIMS Initial Operational Capability. 4557 Continue development of Engagement Skills Trainer. 1400 Continue limited /high priority refinements to CBS Source Code, to support major training exercises (i.e., Prairie Warrior). 8136 Continue development of devices, simulators and simulations to support training at the Combat Training Centers, to include JRTC MOUT Phase II, NTC OIS and CTC Digitization Total 48661 <p>B. Project Change Summary</p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>35951</td> <td>60512</td> <td>57306</td> </tr> <tr> <td>Appropriated Value</td> <td>36752</td> <td>69412</td> <td></td> </tr> <tr> <td>Adjustment to Appropriated Value</td> <td>-3297</td> <td>-2183</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>33455</td> <td>67229</td> <td>48661</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: FY 99 Funds realigned 8645 to higher priority requirements.</p>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	35951	60512	57306	Appropriated Value	36752	69412		Adjustment to Appropriated Value	-3297	-2183		FY 1999 President's Budget	33455	67229	48661
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	35951	60512	57306																				
Appropriated Value	36752	69412																					
Adjustment to Appropriated Value	-3297	-2183																					
FY 1999 President's Budget	33455	67229	48661																				

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	PROJECT	
BUDGET ACTIVITY										PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development										0604715A Non-System Training Devices - Engineering Development			D241
C. Other Program Funding Summary													
OPA3, Appropriation													
NA0100 Training Devices, Non-System													
OPA3, Appropriation													
MA6600 CTC Support													
OPA3, Appropriation													
NA0174 Fire Support Combined Arms Tactical Trainer													
D. Schedule Profile													
WARSIM Software Spiral Build 1													
WARSIM Software Spiral Build 2													
WARSIM Software for JSIMS IOC													
EST Contract Award													
EST MS III													
JRTC-IS IOC													
JRTC MOUT Phase II MS I/III													
JRTC MOUT Phase II PDR													
JRTC MOUT Phase CDR													
CTC OPFOR STV Contract Award													
CTC OPFOR STV PDR													
CTC OPFOR STV CDR													
NTC OIS Contract Award													
NTC OIS MS II													
NTC OIS MS III													
FSCATT IOC													
*Complete Milestones													
Project D241										Page 4 of 11 Pages			
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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
5 - Engineering and Manufacturing Development		D241	
PE NUMBER AND TITLE		0604715A Non-System Training Devices - Engineering Development	
<u>A. Project Cost Breakdown</u>			
System Development	FY 1997	FY 1998	FY 1999
	32783	61113	42137
Test and Evaluation	87	5697	6270
Technical Data	585	419	254
Total	33455	67229	48661
<u>B. Budget Acquisition History and Planning Information:</u> Not Applicable			

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DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604715A Non-System Training Devices -
Engineering Development

D396

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D396 WARSIM Intel Module (WIM)	2650	5490	4660	4356	4050	5265	5516	Continuing	Continuing

A. Mission Description and Justification: D396 - WARSIM Intelligence Module (WIM): WIM is the intelligence driver for Warfighters' Simulation (WARSIM) 2000 and Joint Simulations (JSIMS) Development Agent for Intelligence. It provides simulated, raw intelligence data to drive the intelligence analysis function during major training exercises (i.e., Prairie Warrior, Ulchi Focus Lens, Atlantic Resolve, BCTP Warfighter Exercises and various Corps/Division and Joint exercises).

Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications.

FY 1997 Accomplishments:

- 1035 Performed system requirements analysis, software requirements analysis and system design.
- 460 Initiated Software Development of Spiral Build 1.
- 1155 Contract solicited and awarded for development of WIM capability.
- Total 2650

FY 1998 Planned Program:

- 523 Verification and validation of completed software
- 3140 Complete software development of Spiral Build 1
- 1689 Initiate software development of Spiral Build 2.
- 138 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 5490

FY 1999 Planned Program:

- 680 Verification and validation of completed software
- 3451 Complete development of Spiral Build 2
- 529 Complete version 1.0 for integration into JSIMS
- Total 4660

Project D396

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																												
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																													
5 - Engineering and Manufacturing Development	0604715A Non-System Training Devices - Engineering Development	D396																													
<p>B. Project Change Summary</p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>2722</td> <td>5665</td> <td>5047</td> </tr> <tr> <td>Appropriated Value</td> <td>2781</td> <td>5665</td> <td></td> </tr> <tr> <td>Adjustment to Appropriated Value</td> <td>-131</td> <td>-175</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>2650</td> <td>5490</td> <td>4660</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	2722	5665	5047	Appropriated Value	2781	5665		Adjustment to Appropriated Value	-131	-175		FY 1999 President's Budget	2650	5490	4660								
	FY 1997	FY 1998	FY 1999																												
FY 1998/1999 President's Budget	2722	5665	5047																												
Appropriated Value	2781	5665																													
Adjustment to Appropriated Value	-131	-175																													
FY 1999 President's Budget	2650	5490	4660																												
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	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont'd	Total Cost Cont'd																						
OPA3, Appropriation NA0103 Training Devices, Non-System	4429	3013	0	9644	13643	3624	478																								
<p>D. Schedule Profile</p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>Contract Awarded</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>Spiral Software Build 1</td> <td>3</td> <td>4</td> <td>1</td> </tr> <tr> <td>Spiral Software Build 2</td> <td>X*</td> <td>2</td> <td>3</td> </tr> <tr> <td></td> <td></td> <td></td> <td>4</td> </tr> <tr> <td></td> <td></td> <td></td> <td>X</td> </tr> <tr> <td></td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	Contract Awarded	1	2	3	Spiral Software Build 1	3	4	1	Spiral Software Build 2	X*	2	3				4				X				X
	FY 1997	FY 1998	FY 1999																												
Contract Awarded	1	2	3																												
Spiral Software Build 1	3	4	1																												
Spiral Software Build 2	X*	2	3																												
			4																												
			X																												
			X																												
* Completed Milestones																															

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
5 - Engineering and Manufacturing Development		D396	
PE NUMBER AND TITLE		0604715A Non-System Training Devices - Engineering Development	
A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Software Development	1000	3825	2933
System Engineering	522	835	1007
Project Management	1128	830	520
Developmental Test and Evaluation	0	0	200
Total	2650	5490	4660
B. Budget Acquisition History and Planning Information: Not Applicable			
Project D396		Exhibit R-3 (PE 0604715A)	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	PROJECT																			
BUDGET ACTIVITY		PE NUMBER AND TITLE																												
5 - Engineering and Manufacturing Development		0604715A Non-System Training Devices - Engineering Development								February 1998 D573																				
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
D573	STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD) Support	10037	10246	10714	11584	11814	11601	11372	Continuing	Continuing																				
<p>A. Mission Description and Justification: D573 - STRICOM and NAWCTSD Support: This project funds STRICOM personnel salaries and support costs and a proportionate Army share of the operating costs of the Naval Air Warfare Center Training Systems Division (NAWCTSD) through an Inter-Service support agreement which is reviewed annually.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 8837 Funded STRICOM personnel and support costs for Non-System Training Device programs. 1200 Funded NAWCTSD support costs for Non-System Training Device programs.. Total 10037 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 8996 Funds STRICOM personnel and support costs for Non-System Training Device programs.. 1250 Funds NAWCTSD support costs for Non-System Training Device programs.. Total 10246 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 9464 Funds STRICOM personnel and support costs for Non-System Training Device programs.. 1250 Funds NAWCTSD support costs for Non-System Training Device programs.. Total 10714 <p>B. Project Change Summary</p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>10115</td> <td>10572</td> <td>10695</td> </tr> <tr> <td>Adjustment to Appropriated Value</td> <td>10332</td> <td>10572</td> <td></td> </tr> <tr> <td></td> <td>-295</td> <td>-326</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>10037</td> <td>10246</td> <td>10714</td> </tr> </table> <p>C. Other Program Funding Summary: Not Applicable</p>											FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	10115	10572	10695	Adjustment to Appropriated Value	10332	10572			-295	-326		FY 1999 President's Budget	10037	10246	10714
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																											
Appropriated Value	10115	10572	10695																											
Adjustment to Appropriated Value	10332	10572																												
	-295	-326																												
FY 1999 President's Budget	10037	10246	10714																											

Project D573

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604715A Non-System Training Devices - Engineering Development	D573
<p>D. <u>Schedule Profile:</u> The nature of this project does not lend itself to acquisition milestones.</p>		
Project D573		Exhibit R-2 (PE 0604715A)

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development		0604715A Non-System Training Devices - Engineering Development	D573
A. Project Cost Breakdown			
Fund STRICOM Personnel & support	FY 1997	FY 1998	FY 1999
	8837	8996	9464
Fund NAWCTSD Support	1200	1250	1250
Total	10037	10246	10714
B. Budget Acquisition History and Planning Information: Not Applicable			
Project D573		Page 11 of 11 Pages	Exhibit R-3 (PE 0604715A)

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BUDGET ACTIVITY										February 1998
PE NUMBER AND TITLE										
5 - Engineering and Manufacturing Development										
0604716A Terrain Information - Engineering Development (TIARA)										
COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	6969	2825	2999	5059	4065	5943	5133	Continuing	Continuing	
D579 Field Army Map Sys Eng Dev	6969	2825	2999	5059	3606	5186	4393	Continuing	Continuing	
D598 High Volume Map Production Equip (HVMPE)	0	0	0	0	459	757	740	Continuing	Continuing	

Mission Description and Budget Item Justification: Combat Terrain Information Systems (CTIS) provide automated terrain analysis and reproduction in support of Intelligence Preparation of the Battlefield (IPB), Command and Control, Terrain Visualization, weapons and sensor systems, and other topographic information customers. CTIS consists of two versions of the Digital Topographic Support System/Quick Response Multicolor Printer (DTSS/QRMP) [i.e., HMMWV (Light) and 5-ton (Heavy)], the DTSS-Multispectral Imagery Processor (DTSS-MSIP), and the High Volume Map Production Equipment (HVMPE). Additionally, HQDA directed the acquisition of the Topographic Imagery Integration Prototype (TIIP). The Project Director for CTIS (PD CTIS) is responsible for developing, procuring, and fielding of topographic support systems for the Army. In addition, a Pre-Planned Product Improvement (P3I) program will be conducted to enable technology insertion (e.g., improved Army Battle Command Systems (ABCS) interoperability, automated feature extraction, improved tactical decision aid functionality), as well as the cyclic upgrade of Commercial Off-the-Shelf equipment. PD CTIS has management responsibility for planning system integration and execution of assigned products from development through hand-off to the Readiness Command. The DTSS/QRMP, DTSS-MSIP, and TIIP fall under the Field Army Mapping System Engineering Development (D579) project. The HVMPE falls under the D598 project. The projects in this program element (Terrain Information - Engineering Development) support research efforts in the Engineering and Manufacturing Development (EMD) phases of the Acquisition Strategy and are therefore correctly placed in Budget Activity 5.

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DATE
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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604716A Terrain Information - Engineering

D579

Development (TIARA)

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D579 Field Army Map Sys Eng Dev	6969	2825	2999	5059	3606	5186	4393	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element funds development of the Digital Topographic Support System/Quick Response Multicolor Printer (DTSS/QRMP). The current terrain analysis, topographic and reproduction support provided by Army Engineer Terrain Teams is a slow, labor intensive process that does not meet the needs of the Force XXI battlefield in which the commander must have the ability to rapidly obtain terrain information and topographic products. The Combat Terrain Information Systems (CTIS) Modernization Plan stated the requirement to proceed immediately with the Downsized DTSS and further identified that QRMP functionality would be incorporated into the DTSS for a single integrated terrain analysis and reproduction capability. It has been determined that the downsized (Light) capability is now more appropriate to support contingency operations, operations other than war, and split based operations. The DTSS/QRMP will be deployed at Division, Corps, and EAC in support of these missions. The DTSS/QRMP will automate the updating and processing of terrain information into terrain analysis products, provide rapid reproduction of low volume, up-to-date, large format, full color imagery maps, situation overlays, special graphics (e.g. captured enemy maps) and other topographic and terrain products. Using the most current technology available, the functional capabilities of DTSS and QRMP will be developed into a single interoperable architecture. Part of imagery exploitation includes the development of a Multi-Spectral Imagery Processor (MSIP), which provides an image map making capability. Due to current world events and the possibility of contingency missions in areas where standard map products are not available, image map production has become an urgent need.

Acquisition Strategy: The Acquisition Strategy being pursued for the DTSS/QRMP (Light) EMD phase is to utilize Army standard equipment and the Common Hardware/Software (CHS) computer workstations in conjunction with non-development item (NDI) components to develop an integrated baseline hardware configuration. The Combat Terrain Information Systems (CTIS) System Engineering and Integration (SE&I) contractor is executing EMD phase, performing system integration, and has provided units for formal test and evaluation. Acquisition of the MSIP was completed in FY 1996. Based upon CINC, TRADOC and PEO C3S User Evaluation approvals, the MSIP will be Type Classified - Standard and added to the gaining unit's Table of Organization and Equipment. The acquisition of the MSIP relied upon existing contracts and commercial-off-the-shelf to the fullest extent possible. Existing DTSS units are being upgraded to a 5-ton ISO 20 foot shelter configuration. The upgraded 5-ton systems will provide an integrated DTSS/QRMP (Heavy) capability while preserving the Army's investment in the DTSS. Program Management responsibility and milestone decision authority have been assigned to the Program Executive Officer for Command, Control, and Communications Systems (PEO C3S). Project management is provided by the Project Director (PD) for Combat Terrain Information Systems. The contracting strategy for the DTSS/QRMP (Light) program is to execute the EMD phase through the current SE&I contractor, Lockheed Martin Corporation. A Competitive Cost Plus Fixed Fee (CPFF) contract was awarded for the CTIS SE&I contract. A competitively awarded, Firm Fixed Price (FFP) contract is anticipated for the Full Rate Production of the downsized DTSS/QRMP (Light). Upgrades to the existing DTSS units will also be accomplished through a production contract with Lockheed Martin Corporation. The computer workstations for CTIS programs are being procured through the project manager for CHS.

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																																			
5 - Engineering and Manufacturing Development	0604716A Terrain Information - Engineering Development (TIARA)	D579																																																			
<p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 5469 Completed development of downsized DTSS/QRMP • 500 Conducted test and evaluation of EMD Prototypes • 1000 Initiated P3I development for DTSS/QRMP <p>Total 6969</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 2754 Continue P3I development for DTSS/QRMP - communications and ABCS interoperability • 71 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR) <p>Total 2825</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2999 Continue P3I development for DTSS/QRMP - communications and ABCS interoperability <p>Total 2999</p> <p>B. Project Change Summary</p> <table> <tr> <td>FY 1998/1999 Presidents Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>7144</td> <td>2942</td> <td>2686</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>6969</td> <td>2942</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td></td> <td>-117</td> <td>2999</td> </tr> <tr> <td></td> <td>6969</td> <td>2825</td> <td></td> </tr> </table> <p>Change Summary Explanation: Funding - FY 1999 (+313) funding increased to support the Pre-Planned Product Improvement (P3I) Program</p> <p>C. Other Program Funding Summary</p> <table> <tr> <td>OPA - KA2550 - DTSS</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> <td>FY 2000</td> <td>FY 2001</td> <td>FY 2002</td> <td>FY 2003</td> <td>To</td> <td>Total</td> </tr> <tr> <td></td> <td>6386</td> <td>7246</td> <td>21230</td> <td>16303</td> <td>9005</td> <td>4610</td> <td>4659</td> <td>Compl</td> <td>Cost</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cont</td> <td>Cont</td> </tr> </table>				FY 1998/1999 Presidents Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	7144	2942	2686	Adjustments to Appropriated Value	6969	2942		FY 1999 President's Budget		-117	2999		6969	2825		OPA - KA2550 - DTSS	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total		6386	7246	21230	16303	9005	4610	4659	Compl	Cost									Cont	Cont
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								Cont	Cont																																												

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604716A Terrain Information - Engineering

D579

Development (TIARA)

D. Schedule Profile

	FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2
Complete Downsize DTSS/QRMP (Light) Developmental Test and Evaluation/Operational Test and Evaluation (DT&E/OT&E)			X*			
Downsize DTSS/QRMP (Light) Milestone III						
Initiate Fielding of DTSS (Heavy)						
Award DTSS/QRMP (Light) Production Contract					X	
Complete Fielding of DTSS/QRMP (Heavy)						X

*Milestone Complete

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

BUDGET ACTIVITY

PROJECT

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604716A Terrain Information - Engineering

Development (TIARA)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
A. <u>Project Cost Breakdown</u>			
Primary System Development	1800	100	200
Software Development	2749	1362	1492
Government Furnished Equipment	100	50	50
Government Engineering Support (includes Test Support)	942	150	150
Contractor Engineering Support	550	280	280
Licenses and Maintenance	15	12	27
Project Management and Administration	813	800	800
SBIR/STTR		71	
Total	6969	2825	2999

B. Budget Acquisition History and Planning Information

Performing Organizations											
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
Product Development Organizations											
Loral Defense Akron, OH	C/CPFF/FFP Prod Option	JUL 87	35657	35657	35657	0	0	0	0	35657	
Lockheed Martin Ft Wash, PA	C/CPFF	JAN 93	21023	21023	16951	4549	962	0	0	22462	
In-House Sp/TEC	MIPR				976	828	812	827	Cont	3443	
TBD	TBD	TBD	0		0	0	500	1692	Cont	2192	
Support and Management Organizations											
SYTEX	FFP thru PM				400	150	100	100	Cont	750	
McLean, VA	Intel Fusion										
MITRE Corp	FFRDC thru				500	400	180	180	Cont	1260	
McLean, VA	CECOM										
OGAs	MIPR				397	542	100	100	Cont	1139	
SBIR/STTR							71			71	
Test and Evaluation Organizations											
TECOM	MIPR				235	400	50	50	Cont	735	

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PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604716A Terrain Information - Engineering

D579

Development (TIARA)

Government Furnished Property

Contract

Method/Type

Delivery

Date

Award of

Obligation

Date

or Funding

Vehicle

Item

Description

Product Development Property

REQS

SUN's (ECS)

REQS

PULSAR/ECS

REQS

Support and Management Property: None

Test and Evaluation Property: None

Total

Prior to

FY 1997

FY 1997

FY 1998

FY 1999

FY 1999

Complete

Budget to

Program

Total

Program

450

0

0

100

0

50

0

50

0

Cont

450

200

54034

1297

5477

1092

2324

451

2569

380

64404

3220

235

400

55566

6969

2825

2999

50

735

68359

64404

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE		February 1998		
BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT		
5 - Engineering and Manufacturing Development		0604726A Integrated Meteorological System (IMETS) (TIARA)						DD85		
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DD85 Integrated Meteorological System (IMETS)		0	1887	1790	2192	1669	1774	1735	13279	33926

A. Mission Description and Budget Item Justification: This program element, Integrated Meteorological System (IMETS), funds the development of the IMETS evolving upgrades to the fielded IMETS, integrating the Defense Information Infrastructure (DII) and Common Operating Environment (COE). The IMETS is a mobile tactical automated weather data receiving, processing, and dissemination system designed to provide timely weather and environmental effect forecasts, observations, and decision aid support to the Army. The IMETS is an Army-furnished system consisting of a standard shelter and vehicle, and Army Common Hardware and Software of the Army Battle Command System which will be operated by Air Force weather personnel and maintained within planned Army support for systems and components IAW AR115-10/AFR 105-3. It is essential that the battlefield commander be provided the most accurate and timely weather data for his intelligence preparation of the battlefield. IMETS is the first link in providing this data. This project supports research efforts in the engineering and manufacturing development phase of the acquisition cycle and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The IMETS Block III development program will build on the Block II initiative including conversion to the DII and the Army C4I Technical Architecture. The IMETS NDI acquisition strategy has proven successful in the fielding of twenty systems since program initiation in FY92. This development strategy will be continued to include software modules as they mature and become part of the COE library. A common map server update is of primary focus along with increased user distributed communication environment interoperability. Weather tactical decision aid upgrades and updated forecaster aids will be developed to include products from the Air Force initiative called the High Resolution Weather Satellite Receiver, the Small Tactical Terminal for Defense Meteorological Satellite Program (DMSP) and high resolution domestic and foreign weather satellite data. Weather Application modules from the Army Research Laboratory will be integrated and fielded as a capability upgrade to the current software baseline.

FY 1997 Accomplishments: Project not funded in FY97

FY 1998 Planned Program:

- 1163 Develop, investigate and apply advanced technologies to the IMETS prototype for expanded capabilities and performance in the areas of battlescale forecast modeling, Integrated Weather Effects Decision Aid, Vis5D, Target Area Met, thunderstorm and turbulence model, and weather overlays on ATCCS SITMAP
- 676 Evaluate, configure and integrate high performance expanded tech base prototype capabilities into operational IMETS prototypes
- 48 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 1887

Project DD85

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604726A Integrated Meteorological System

DD85

(IMETS) (TIARA)

FY 1999 Planned Program:

- 909 Continue to investigate, develop, test and apply advanced software and hardware processing, storage, display and input/output (I/O) technologies to tech base prototypes of high performance expanded weather applications capabilities including continued battlescale forecast modeling; evaluation of the DoD Meteorological Satellite Program Special Sensor Data, environmental record data, for integration into the Weather Effects database; generate Down Wind Message from BEM; adapt AF EOTDA to Army Applications, Applications to support Aviation Mission Planning; develop heat/cold tactical decision aid
 - 881 Continue to evaluate, configure and integrate tech base prototype capabilities into operational IMETS prototypes
- Total 1790

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
0	1946	1931
0	1946	
0	-59	
0	1887	1790

C. Other Program Funding Summary

OPA 2 - SSN: BW0021-IMETS

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
3125	1338	4890	8581	0	0	0	0	17934

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 1999
1	2	3	4	1	2	3	4
Develop tech base prototype							
Expand Battlescale Forecast Model							
Develop/integrate Vis5D program							
Develop thunderstorm and turbulence model							
Develop Target Area Meteorological capability							
Generate basic Down Wind Message from BFM							
Integrated Weather Effects Decision Aid							

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BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT
5 - Engineering and Manufacturing Development		0604726A Integrated Meteorological System (IMETS) (TIARA)		DD85
<u>D. Schedule Profile</u>		FY 1997		FY 1999
	1	2	3	4
Integrate Defense MetSat Program				
Environmental Data Record				
Adapt AF EOTDA to Army Applications				
Develop Applications to support Aviation				
Mission Planning				
Develop heat/cold tactical decision aid				

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604726A Integrated Meteorological System
(IMETS) (TIARA)

DD85

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Systems Development	0	1614	1443
Project Management	0	112	148
Matrix Management	0	113	149
Test	0	0	50
SBIR/STTR		48	
Total	0	1887	1790

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Logicon	Task Order				9600	0	451	584	8891	19526
ARL	MIPR				0	0	1163	859	8691	10713
Misc. Contracts	PWD				0	0	0	0	0	
Support and Management Organizations										
CECOM	MIPR				0	0	225	297	3067	3589
SBIR/STTR							48			48
Test and Evaluation Organizations: None										
EPG	MIPR				0	0	0	50	0	50

Government Furnished Property: None

Subtotal Product Development	9600	1614	1443	17582	30239
Subtotal Support and Management		273	297	3067	3637
Subtotal Test and Evaluation			50		50
Total Project	9600	1887	1790	20649	33926

Project DD85

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT		
5 - Engineering and Manufacturing Development		0604739A JTT/CIBS-M (TIARA)								D702		
COST (In Thousands)		FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
D702	Common Integrated Broadcast Service-Modules	4588	4360	4447	4426	4409	0	0	0	22369		
<p>A. Mission Description and Budget Item Justification: The Integrated Broadcast Service (IBS) is the worldwide, DoD standard network for transmitting tactical and strategic intelligence and targeting data. The Common Integrated Broadcast Service - Modules (CIBS-M) Joint Program (all military departments and SOCOM) was created to consolidate and replace existing IBS receiver functionality/capability, inherent with the duplicative existing systems, with a "common family" of IBS modules (both hardware and software). This is required to implement the IBS plan and consolidate/eliminate duplication of effort previously spread across multiple PEs/SSNs DoD wide. This program funds design, development, test and evaluation of initial CIBS hardware and software modules, as well as implementing performance expanding modifications to the family of CIBS-M equipment. This program element supports development efforts in the Engineering and Manufacturing development phase of the Acquisition Strategy; therefore, is correctly placed in Budget Activity 5.</p> <p>Acquisition Strategy: The CIBS-M family of modules will be the sole provider of IBS Modules to a variety of IBS receivers across all DOD component agencies. The Joint Program will competitively develop hardware and software modules and procure the required modules for integration into host receiver systems. Additionally, this program provides for necessary modifications to IBS modules as the broadcast networks continue to evolve and modify their formats and protocols.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 2990 Space Warfare Systems Command (SSC) S/W Study (S/W & Configuration Management Plan • 980 Initial Module Development Planning, Host Integration/Configuration Management • 443 Tactical Integrated Broadcast Service (TIBS) Certification Testing • 175 CTT/MATT Modeling & Simulation Support <p>Total 4588</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 1450 CIBS-Module prototype design) • 1644 CIBS-Module Development) • 1157 Design/Develop CIBS Interface to Commanders Tactical Terminal (CTT) and Multi Mission Advanced Tactical Terminal (MATT)) • 109 Small Business Innovative Research/Small Business Technology Transfer Programs <p>Total 4360</p>												

Project D702

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604739A JTT/CIBS-M (TIARA)

D702

FY 1999 Planned Program:

- 1309 Continue CIBS-M Development
- 490 Initiate "Over the Air" Software Load Capability
- 848 Complete Development/Test CIBS-M Interoperability with CTT
- 1800 Design/Develop Reduced Size JTT Configuration (3/4 ATR)
- Total 4447

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 Presidents Budget	4765	4499	4447
Appropriated Value	4648	4499	
Adjustments to Appropriated Value	-60	-139	
FY 1999 President's Budget	4588	4360	4447

Change Summary Explanation: Schedule: Module development delayed one year due to sustained contract protest.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
V29600 JTT/CIBS-M (Tiara)	20801	11190	5340	24761	25527	12402	12973	0	5671
BA1081 Integrated Broadcast Terminal Mod (Tiara)	1445	3197	6487	0	0	0	0	0	

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
Initiate Gov't Module Design Planning	1	2	3	4	1	2	3
Award JTT Contract			X				
Award CIBS-M Development Mod							
Initial CIBS-M Prototype		X					
Complete CIBS-M/CTT Interop Test						X	
Complete CIBS-M/MATT Interop Test							X
Initial CIBS-M Integration into other							X
SATCOM Terminals (eg.SPITFIRE,JCIT)							

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

0604739A JTT/CIBS-M (TIARA)

D702

Government Furnished Property: None

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)						DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE							D702
5 - Engineering and Manufacturing Development	0604739A JTT/CIBS-M (TIARA)							
	Total	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program		
	Prior to FY 1997							
Subtotal Product Development		3243	3945	3431	8165	18784		
Subtotal Support and Management		902	415	184	220	1721		
Subtotal Test and Evaluation		443		832	450	1725		
Total Project		4588	4360	4447	8835	22230		

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 Project D702

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
5 - Engineering and Manufacturing Development		0604741A Air Defense Command, Control, Intelligence - Engineering Development		D126					
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D126 FAAD Command and Control Engineering Development	19577	21181	6476	7571	8500	17810	19886	Continuing	Continuing

A. Mission Description and Justification: Project D126 - FAAD Command and Control Eng Dev: The Forward Air Defense Command and Control (FAAD C2) System is an automated system deployed with FAAD weapons to provide accurate and timely command, control and targeting information for the weapon systems. The system utilizes non-developmental item sensors, computers, displays and interface hardware integrated with data communication equipment. It automates mission related functions and uses the Single Channel Ground and Airborne Radio Systems (SINCGARS) for voice and the Army Data Distribution System (ADDS) for data.

Acquisition Strategy: The acquisition strategy relies heavily on non-developmental items (NDI) and evolutionary software development to rapidly overcome our current air defense command, control and intelligence deficiencies and to keep pace with the advancing technologies. The concept of evolutionary software development is being followed and will be accomplished in Blocks - I, II, III and IV. Blocks I and II have been completed. Block III is currently being developed.

FY 1997 Accomplishments:

- 1877 Conducted Block III V4.R Integration, Assembly, and Test (IA&T) and System Certification Test (SCT)
- 17600 Continued Block III Software Development
- 100 Prepared for Block III Development Test (DT)
- Total 19577

FY 1998 Planned Program:

- 2499 Digitization integration
- 14447 Continue Block III development
- 3791 SENTINEL GBS
- 444 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 21181

FY 1999 Planned Program:

- 100 System Certification Test
- 3251 Complete Block III SW development
- 3125 Digitization integration
- Total 6476

Project D126

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PROJECT

**0604741A Air Defense Command, Control,
Intelligence - Engineering Development**

	FY 1997	FY 1998	FY 1999
1. Administrative	100	100	100
2. Programs	100	100	100
3. Capital	100	100	100
4. Debt	100	100	100
5. Other	100	100	100
6. Total	100	100	100

$$\begin{array}{r} 20031 \\ \hline 18350 \\ \hline 6698 \end{array}$$

19624 22350

-47 -1169

19577	21181	6476
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Funding: FY 1998 (+2831) reflects Congressional increase for SENTINEL GBS (+4000) and undistributed Congressional reductions applied against this PE/Project (-1169).

To

Total

To

Total

To

Total

To

Total

To

Total

To

Total

To

Total

To
Total

FY 1997	FY 1998	FY 1999
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FY 1997	FY 1998	FY 1999
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FY 1997	FY 1998	FY 1999
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FY 1997	FY 1998	FY 1999
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RD&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

**0604741A Air Defense Command, Control,
Intelligence - Engineering Development**

PROJECT

D126

<u>A. Project Cost Breakdown</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Major Contracts	15254	14684	4749
Support Contract	1000	500	200
PMO/In-house/Other	2414	1562	1227
GFEE/Testing	909	200	300
SENTINEL GBS		3791	
SBIR/STTR		444	
Total	19577	21181	6476

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TRW	C/CPIF	Sep 86	176461	176461	176461	0	0	0	0	176461
TRW	SS/CPIF	Aug 92	32206	32206	32206	0	0	0	0	32206
TRW	SS/CPIF	Sep 94	53194	53194	21900	13264	12684	4749	Cont	52597
TRW	SS/T&M	Sep 93	4900	4900	2205	1888	2000	0	Cont	6093
Matrix (RDEC)	MIPR				3351	1072	1000	532	Cont	5955
SENTINEL GBS							3791			3791
Support and Management Organizations										
SETA, CAS	SS/CPFF	Feb 91	10879	10879	10879	0	0	0	0	10879
In-House/ Other SBIR/STTR					7962	2343	1062	895	Cont	12262
							444			444
Test and Evaluation Organizations										
ADATD, Ft Bliss					9006	810	0	100	Cont	9916
OPTEC					2000	0	0	0	0	2000

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604741A Air Defense Command, Control,
Intelligence - Engineering Development

D126

Government Furnished Property

Contract

Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date
CHS	MIPR	1988	
JTIDS	MIPR		

Product Development Property

Support and Management Property: None
Test and Evaluation Property: None

Subtotal Product Development
Subtotal Support and Management
Subtotal Test and Evaluation
Total Project

Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
600	200	200	200	0	1200
6000	0	0	0	0	6000
242723	16424	19675	5481		284303
18841	2343	1506	895		23585
11006	810		100		11916
272570	19577	21181	6476		319804

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604746A Automatic Test Equipment
Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	8868	8220	7030	7424	6749	7740	7222	Continuing	Continuing
DL59 Diagnostic/Expert System Development	8868	8220	4030	5424	6749	7740	7222	Continuing	Continuing
DL65 Calibration Sets Development	0	0	3000	2000	0	0	0	0	5000

Mission Description and Budget Item Justification: This program element provides for the development of automatic test equipment (ATE) to support the increasingly complex electronics of all Army weapon system commodities including armor, aviation, missile, and communications-electronics. The program focuses on test technologies which are common to multiple weapon platforms and are commercial state of the art to minimize the cost of troubleshooting and maintenance in the field. This program element further provides for the development of modular, reconfigurable automatic and semi-automatic systems to satisfy calibration and repair requirements of Army general purpose test, measurement, and diagnostic equipment (TMDE). The calibration mission covers all equipment commodities, including the most sophisticated TMDE, and requires capabilities to support state-of-the-art technologies. A rapidly deployable calibration set with emphasis on digital electronics and tailored to support Army field units will be developed to alleviate serious deployability and survivability shortfalls in the current systems. Expert systems and artificial intelligence applications are also being developed under this program element to support the Army strategy of improving the ability of weapon systems to help diagnose themselves through embedded sensors and built-in diagnostics. The goal of embedding diagnostics is to minimize the need for external testers and to improve the troubleshooting abilities of soldiers in the field. Emphasis will be on providing paperless maintenance manuals/procedures and battlefield electro-optics displays which will reduce the Army's investment in test program sets and in maintenance publications and procedures. These projects are appropriately assigned to Budget Activity 5 since they provide for engineering and manufacturing development of new ATE and calibration systems to meet the test, measurement, and diagnostic requirements of the Army's weapons and support systems, and for incorporation of modern technologies into the Army's ATE and calibration systems.

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604746A Automatic Test Equipment
Development

DL59

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL59 Diagnostic/Expert System Development	8868	8220	4030	5424	6749	7740	7222	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project funds development of expert/diagnostic systems and general purpose test equipment. These systems and equipment are required to overcome existing deficiencies and voids in organic test and diagnostic capabilities and to ensure the operational readiness, accuracy, and effectiveness of the Army's weapons and combat support systems. The project provides for development of diagnostic technologies and state-of-the-art general purpose test equipment to support the Army's weapon systems, improvement of general purpose test equipment to meet new testing and technological requirements, market surveys of commercially available general purpose test equipment to determine applicability to Army requirements, evaluations and validations of diagnostic software on targeted hardware, and development/evaluation of test program sets (TPS) for use with standard automatic test equipment. Applications of state-of-the-art technologies in expert systems and artificial intelligence, paperless maintenance and troubleshooting manuals, electro-optics displays for battlefield use, and soldier-friendly equipment will be developed to meet identified requirements.

Acquisition Strategy: When the necessary expertise and capability are available within the Department of Defense, services are ordered from the government source; otherwise, commercial contracts are used. Equipment required for developmental projects is obtained by contract from the commercial supplier. Candidate non-developmental items and commercial equipment are identified and evaluated through market surveys and bid sample testing.

FY 1997 Accomplishments:

- 1175 Tested new contact test set (Soldier Portable On-System Repair Tool) (SPORT) hardware and Apache cables.
- 1607 Tested new state-of-the-art commercial equipment for use in Army test equipment programs.
- 4700 Continued integration and testing of the Electro-Optics Test Facility.
- 486 Continued development of the Failure Analysis and Maintenance Planning System for SPORT.
- 500 Completed development of Kiowa Warrior electro-optic TPSs.
- 400 Commenced development/rehost of Apache electro-optic TPSs.
- Total 8868

FY 1998 Planned Program:

- 1500 Upgrade digital capability of Integrated Family of Test Equipment off-system tester to VXI (open architecture).
- 2244 Modify Navy Consolidated Automated Support System electro-optics (EO) module for use in Army EO tester.
- 1882 Complete integration and testing of the Electro-Optics Test Facility.
- 1700 Complete development/rehost of Apache EO test program sets.

Project DL59

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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PE NUMBER AND TITLE

0604746A Automatic Test Equipment

DL59

- 700 Complete development of the Failure Analysis and Maintenance Planning System for the Soldier Portable On-System Repair Tool (SPORT).

Total 8220

- 510 Test and evaluate a Society of Automotive Engineers J1939 data bus as a SPORT test capability.

- 2497 Develop interface software needed by test program set developers to utilize Integrated Family of Test Equipment electro-optics test capabilities.

- 1023 Evaluate Navy diagnostics for the SH-60 for application to Army UH-60 and review Marine Corps testing of real-time maintenance reporting.

Total 4030

	FY 1997	FY 1998	FY 1999
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2582	2533
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8582

-925

8220

Funding: FY 1998 appropriated value +6000 Congressional increase; adjustment -362 undistributed Congressional reduction.

Funding: FY 1999 +1479 increase supports high priority software development requirement.

Total
To

15414

151

4408

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE
February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604746A Automatic Test Equipment
Development

DL59

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Systems Engineering	2399	3976	983
Software Development/Engineering	5091	3150	2497
Testing	700	750	300
Miscellaneous	678	344	250
Total	8868	8220	4030

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations:										
Northrop	SS/CPFF	Various*	13179	13179	1385	5450	6344		0	26358
Grumman, Bethpage, NY										
Other Contracts	Various	Various			53719	1516	676	2830	Cont	Cont
Support and Management Organizations:										
Govt In-House					9425	1902	1200	1200	Cont	Cont
Test and Evaluation Organizations:										
None										

Government Furnished Property: None

*Basic contract awarded Jul 96; follow-on delivery orders through Jul 98.

Subtotal Product Development	55104	6966	7020	2830	Cont	Cont
Subtotal Support and Management	9425	1902	1200	1200	Cont	Cont
Subtotal Test and Evaluation	64529	8868	8220	4030	Cont	Cont
Total Project						

Project DL59

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604746A Automatic Test Equipment
Development

PROJECT

DL65

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL65 Calibration Sets Development	0	0	3000	2000	0	0	0	0	5000

A. Mission Description and Budget Item Justification: This project funds development of major program elements of the Army's next generation calibration set (CALSET 2000). A redesigned, rapidly deployable calibration set is required to overcome existing deficiencies and voids in organic calibration and repair capabilities. Experiences/lessons learned from Desert Shield/Desert Storm and from operations in Somalia and Bosnia have highlighted the need for a more mobile and upgraded calibration set. Primary needs are for an appropriate mobility footprint which will allow airlift via C-141 or C-130 aircraft, greatly reduced electromagnetic interference/radio frequency interference signature for operations on the modern digital battlefield, and enhanced battlefield mobility. The down-sized calibration set to be developed under this project will employ reconfigurable, open electronics architecture wherever feasible and will be housed in transport configurations appropriate for airlift via C-141/C-130 aircraft.

Acquisition Strategy: When the necessary expertise and capability are available within the Department of Defense, services will be ordered from the government source; otherwise, commercial contracts will be used. Existing equipment and instrumentation and commercial off-the-shelf components will be used to the maximum extent possible. Development will be limited primarily to overcoming commercial market barriers (e.g., economic and packaging) rather than overcoming technology barriers.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 2125 Initiate development of two prototypes combining the current AN/GSM-286 and AN/GSM-287 Calibration Sets into a downsized configuration.
- 125 Perform Manpower and Personnel Integration study of the prototype calibration set.
- 500 Acquire smaller and lighter high-precision calibration standards for technology insertion into the downsized equipment configuration.
- 250 Initiate development of software to link calibration set computers for interactive electronic technical manual, training, controls, and other applications.
- Total 3000

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
0	0	0

0	0	3000
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Project DL65

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604746A Automatic Test Equipment Development								DL65	
Change Summary Explanation: Funding: FY 1999 +3000 plus up supports development of downsized calibration set.											
C. <u>Other Program Funding Summary</u>											
OPA2, BZ5269, Calibration Sets Equipment		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total	
OPA3, N10000, Calibration Sets Equipment		10984	6418	9984	11639	18862	15921	16694	Compl	Cost	
									0	135644	
									Cont	Cont	
D. <u>Schedule Profile</u>: Not applicable.											
Project DL65											
Page 6 of 7 Pages											
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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)							DATE		February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								
5 - Engineering and Manufacturing Development		0604760A Distributive Interactive Simulations - Engineering Development								
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		17618	20249	2766	5890	6877	17186	26249	0	Continuing
DC73 Synthetic Theater of War		9768	5657	0	0	0	0	0	0	15425
DC74 Developmental Simulation Technology		2429	2360	0	0	0	0	0	0	4789
DC77 Interactive Simulation		5421	8355	1380	2929	3411	8508	8508	0	Continuing
DC78 Computer Generated Forces		0	3877	1386	2961	3466	8678	17741	0	Continuing

Mission Description and Budget Item Justification: Distributed Interactive Simulation (DIS) is a synthetic environment within which humans may interact through a systematic connection of different subcomponent simulations, simulators and/or instrumented live task forces. These DIS components may reside at local and distributed locations, using various simulation hardware linked through use of a standard communication architecture. This Program Element provides for the engineering development and application of DIS technology to electronically link all subcomponents together to create a scaleable battlefield, both horizontally and vertically. The synthetic environment is used to verify the scenarios, tactics/techniques and procedures, train testers on new hardware/software and conduct trial test runs before costly live field tests. Project DC73, Synthetic Theater of War, supports engineering development and integration of the Synthetic Theater of War-Army (STOW-A). Project DC74, Developmental Simulation Technology, provides engineering development of DIS tools (e.g., Distributed Interactive Simulation Exercise Toolset (DISECT) for exercise management, techniques, standards and applications in support of the Army's Core DIS Facilities (CDF) at Forts Knox, Benning and Rucker, and the Operational Support Facility in Orlando, FL). Project DC77, Interactive Simulation, focuses on engineering development of techniques and technology for reconfigurable simulators operating in the DIS virtual environment and related simulations and simulator efforts. The FY98 program provides a Reconfigurable Research and Development Simulation tool that will allow the battlelabs to accomplish their mission in support of the Advanced Concept & Requirements (ACR), Research, Development and Acquisition (RDA), and Training Exercise and Military Operations (TEMO) domains. The reconfigurable simulator program will provide tools to the Army's Battle Labs and Core DIS facilities to conduct experiments in all three domains. Project DC78 develops and upgrades computer generated forces software systems which support experimentation, concept evaluation, materiel development and training. Work done on this program will have benefit across the Army and DOD by providing standards for interoperability and software reuse in this emerging domain. This Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition cycle and therefore is correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604760A Distributive Interactive Simulations - Engineering Development

DC73

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC73 Synthetic Theater of War	9768	5657	0	0	0	0	0	0	15425

A. Mission Description and Justification: Project DC73 - Synthetic Theater of War: This project supports engineering development and integration of the Synthetic Theater of War (STOW). Development focuses on leveraging existing and emerging technology in a manner that produces substantial and continual improvements in combat readiness through the use of full spectrum, high fidelity, distributed simulation capability to support a large scale DIS user based exercise/experiment for JOINT VENTURE training and analytical needs.

Acquisition Strategy: Development and procurement through delivery orders to competitively selected contractors providing Systems Engineering and Integration and Advanced Development Simulation Technology, based on performance specifications.

FY 1997 Accomplishments:

- 2995 Developed and applied distributed simulation technology to support the Synthetic Theater of War and joint venture/digitization.
- 1338 Completed the Early Entry Operations and Service Support Analysis (EEOSSA) Phase 1 PPQT and continued the development of EEOSSA and Ground Vehicle
- 5020 Developed and integrated emerging simulation technology in support of Force XXI training program.
- 415 Integrated virtual reality technologies and Dismounted Infantry computer generated forces. Conducted engineering and user level experiments to support ACR, RDA and TEMO simulation requirements.
- Total 9768

FY 1998 Planned Program:

- 5515 Continue development of software and hardware integration used to link live, virtual and constructive legacy simulations to support the Synthetic Theater of War.
- 142 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 5657

FY 1999 Planned Program: Project not funded in FY 1999

Project DC73

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PE NUMBER AND TITLE

0604760A Distributive Interactive Simulations - Engineering Development

DC73

	FY 1997	FY 1998	FY 1999
--	---------	---------	---------

$$\begin{array}{r} 10033 \\ \hline 5837 \\ \hline 0 \end{array}$$

10248 5837

-480 -180

9768 5657 0

Total
To

Cost	Compl
100	100
200	200
300	300
400	400
500	500
600	600
700	700
800	800
900	900
1000	1000

20031	0
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FY 1999

2 3 4

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development	0604760A Distributive Interactive Simulations - Engineering Development				DC73
A. Project Cost Breakdown					
Systems Engineering & Integration	FY 1997	FY 1998	FY 1999		
Hardware Design & Development	2848	3863	0		
Reliability, Availability and Maintainability	1750	490			
Training Support Packages	738	920			
Verification, Validation & Accreditation	4027	0			
	405	384			
Total	9768	5657	0		
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or Government	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999
Method/Type of Funding	EAC	FY 1997			
Vehicle					
Award or Obligation Date					
Performing Activity					
Product Development Organizations					
Lockheed-Martin, DO/CPAF	6089	0	2849	3240	0
Orlando, FL					
Cubic Applications DO/CPIF	1290	0	1290	0	0
Inc., Lacey, WA					
ARI, Alexandria, DO/CPIF	4710	0	3747	963	0
VA					
Support and Management Organizations					
Miscellaneous Various	2547	0	1477	1070	0
Test and Evaluation Organizations					
Miscellaneous Various	789	0	405	384	0
Subtotal Product Development			7886	4203	12089
Subtotal Support and Management			1477	1070	2547
Subtotal Test and Evaluation			405	384	789
Total Project			9768	5657	15425

Project DC73

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998						
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
5 - Engineering and Manufacturing Development		0604760A Distributive Interactive Simulations - Engineering Development		DC74						
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC74	Developmental Simulation Technology	2429	2360	0	0	0	0	0	0	4789
<p>A. Mission Description and Justification : Project DC74 - Developmental Simulation Technology: This project supports the Core Distributed Interactive Simulation (DIS) Facilities (CDF) at Fort Knox, KY, Fort Rucker, AL, Fort Benning, GA and the Operational Support Facility in Orlando, FL, which provide virtual combined arms battlefield with the warfighter-in-the-loop to evaluate weapon system concepts, tactics, doctrine and test plans.</p> <p>Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 865 Developed Distributed Exercise Management (DEM) as a major tool of DISECT for use in support of STOW97 ACTD and future exercises. 1564 Prepared the Core DIS Facilities (CDF) for the implementation of new simulators, improved support for synthetic environment experiments, and increased CDF operational efficiency. <p>Total 2429</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 480 Develop Dismounted Warrior Network, expand the current capabilities to include MOUT and C4I simulation and integrate DI SAF into MODSAF. 366 Complete development of tools which provide improved capabilities for exercise generation and after-action analysis. 493 Simulator Interoperability development and systems integration of CDF architecture to resolve issues of compatibility, compliance, and interoperability. 962 Increase Environmental representation, develop representations of candidate C4I models and CDF/HLA compliance of interfaces for existing CDF equipment. 59 Small Business Innovative Research/Small Business Technology Transfer Programs <p>Total 2360</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p>										

Project DC74

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604760A Distributive Interactive Simulations -
Engineering Development

DC74

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997

2577

2632

-203

2429

FY 1998

2436

2436

-76

2360

FY 1999

3008

Change Summary Explanation: FY 99 Funds realigned (-3008) to higher priority requirements.

C. Other Program Funding Summary

RDTE, A Budget Activity 5, PE 0604760A,

Project DC77, Interactive Simulation

OPA3, KA6000, Reconfigurable Simulators

FY 1997

5421

8355

1380

1967

2296

FY 1998

8355

1380

1967

2296

FY 1999

1380

1967

2296

FY 2000

2929

2929

1420

240

FY 2001

3411

3411

240

FY 2002

8508

8508

273

334

FY 2003

8508

8508

0

To

Compl

0

Total

Cost

Cont'd

15797

D. Schedule ProfileAdvanced Distributed Simulation
Technology (ADST) II Delivery Order
Contract Award

1

X*

FY 1997

2

3

4

1

FY 1998

2

3

FY 1999

2

3

FY 2000

4

1

FY 2001

2

3

FY 2002

4

3

FY 1999

2

3

*Milestone Complete

Project DC74

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604760A Distributive Interactive Simulations -
Engineering Development

DC74

A. Project Cost Breakdown

Systems Engineering & Integration	FY 1997	FY 1998	FY 1999
Primary Hardware Development	1609	1410	0
Reliability, Availability and Maintainability	425	600	0
	395	350	0
Total	2429	2360	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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Product Development Organizations

Lockheed-Martin, Orlando, FL	DO/CPAF	Nov 96	3698	3698	0	1644	2054	0	0	3698
------------------------------	---------	--------	------	------	---	------	------	---	---	------

Support and Management Organizations

Miscellaneous	Various	Various	498	498	0	364	134	0	0	498
---------------	---------	---------	-----	-----	---	-----	-----	---	---	-----

Test and Evaluation Organizations

Miscellaneous	Various	Various	120	120	0	120	0	0	0	120
TASC, Orlando, FL	DO-CPFF	Nov 97	473	473	0	301	172	0	0	473

Subtotal Product Development

Subtotal Support and Management						1644	2054			3698
---------------------------------	--	--	--	--	--	------	------	--	--	------

Subtotal Test and Evaluation

						364	134			498
--	--	--	--	--	--	-----	-----	--	--	-----

Total Project

						421	172			593
						2429	2360			4789

Project DC74

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BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604760A Distributive Interactive Simulations - Engineering Development								DC77	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
COST (in Thousands)											
DC77	Interactive Simulation	5421	8355	1380	2929	3411	8508	8508	0	Continuing	
<p>A. Mission Description and Justification: Project DC77 - Interactive Simulation: This project focuses on engineering development of techniques and Distributed Simulation technology (e.g. HLA) of wide area simulation networking in support of modeling and simulation, doctrinal development, training, and operations, utilizing live, virtual and constructive simulations. Development also supports related simulations and simulator efforts, including the Battlelab Reconfigurable Simulators. Development activities associated with this project were budgeted in Program Element 0604715A, Non-System Training Devices Engineering Development, Project DC91, Distributive Interactive Simulation, in FY 1995 and FY 1996.</p> <p>Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 777 Provided systems engineering and developed standards, interoperability and accreditation processes, and DIS tool to support the synthetic environment. 500 Developed software upgrades/enhancements to support the re-architecture of modular semi-automated forces (MODSAF) computer generated forces system. 4144 Developed the Ground Vehicle and Early Entry Operations and Service Support Analysis Battlelab Reconfigurable Simulators. The Phase 1 PPQT for Early Entry Operations and Service Support Analysis was completed Jun 97. <p>Total 5421</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 2239 Provide systems engineering and develop HLA environment and standards to support interoperability within the training domain. 5906 Solicit and evaluate NDI candidate Reconfigurable Research and Development Simulation Tools. Develop linkages and upgrade R&D tools to achieve HLA and DIS compliance and resolve interoperability issues. 210 Small Business Innovative Research/Small Business Technology Transfer Programs <p>Total 8355</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 880 Provide systems engineering and develop HLA environment and standards to support interoperability within the training domain. 500 Development of distributed simulation technology to support the Synthetic Theater of War and Joint Venture/Digitization. <p>Total 1380</p>											

Project DC77

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604760A Distributive Interactive Simulations - Engineering Development	DC77	
B. Project Change Summary			
FY 1998/1999 President's Budget	FY 1997 3021	FY 1998 8622	FY 1999 4224
Appropriated Value	3086	8622	
Adjustments to Appropriated Value	2335	-267	
FY 1999 Presidents Budget	5421	8355	1380
Change Summary Explanation:			
Funding: FY 97 Reduction (-100) for undistributed congressional reductions, and congressional increase (+2500) for the Battle Lab Reconfigurable Simulators			
FY 99 Funds realigned (-2844) to higher priority requirements.			
C. Other Program Funding Summary			
OPA3, KA6000, Reconfigurable Simulators	FY 1997 2296	FY 1998 13501	FY 1999 1967
RDTE, A Budget Activity 5, PE 0604760A, Project DC74, Interactive Simulation	2429	2360	0
		FY 2000 1420	FY 2001 240
		0	0
		FY 2002 273	FY 2003 334
		0	0
			Total Cost
			15797
			4789
D. Schedule Profile			
Advanced Distributed Simulation	1	2	3
Technology II Delivery Order Contract Awarded	X*	4	1
Software Engineering Institute (SEI) Delivery Order Contract Award		3	2
		X	3
			4
			X
			X
* Milestones Complete			

Project DC77

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604760A Distributive Interactive Simulations -
Engineering Development

DC77

A. Project Cost Breakdown

Systems Engineering & Integration
Develop HLA tools, techniques, standards
Reconfigurable Simulator Hardware/Software Development
Reconfigurable Research & Development Simulation Tool
Total

FY 1997	FY 1998	FY 1999
1367	1337	400
852	750	980
3202	0	0
0	6268	0
5421	8355	1380

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Hughes Training Inc., Orlando, FL	CPIF	Feb 97	3202	3202	0	3202	0	0	0	3202
Lockheed-Martin, Orlando, FL	DO/CPAF	Oct 96	TBD	TBD	0	886	4418	400	Cont'd	5704
Miscellaneous	TBD	TBD	2567	2567	0	0	2087	480	0	2567
Support and Management Organizations										
Miscellaneous	Various	Various	TBD	TBD	0	1034	1500	500	Cont'd	3034
Test and Evaluation Organizations										
Miscellaneous	Various	Various	649	649	0	299	350	0	0	649
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project						5421	8355	1380		15156

Project DC77

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604760A Distributive Interactive Simulations - Engineering Development								DC78	
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DC78 Computer Generated Forces		0	3877	1386	2961	3466	8678	17741	0	Continuing	

A. Mission Description and Justification: Project DC78 - Computer Generated Forces: This project provides for the development of software systems to realistically represent activities of units and forces in simulation. This representation is used to support concept evaluation, experimentation, materiel acquisition and training communities. This project funds improvements, new functionality, enhancements and re-architecture of Modular Semi-Automated Forces (ModSAF). Other initiatives include the systems engineering and design for improvements to the architecture and interoperability of Army SAFs, and the evolution to an Army universal computer generated forces system. This project is not a new start, but rather a realignment of funds from Interactive Simulation (DC77) to more appropriately identify/manage accomplishments of Computer Generated Forces as determined by the Army Modeling Simulation Office (AMSO). OneSAF is a composable next generation SAF which will represent a full range of operations, systems and control processes for support of training research, development and acquisition simulation applications including human-in-the-loop.

Acquisition Strategy: Competitive development leading to competitive procurements against performance specifications.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program:

- 500 Develop and integrate expansion of ModSAF battlefield operating systems representation/upper echelon behavior capabilities.
- 2894 Establish the Integrated Product Team and develop the technical requirements, acquisition planning and concept for OneSAF.
- 385 Verification and validation of newly integrated software.
- 98 Small Business Innovative Research/Small Business Technology Transfer Programs.
- Total 3877

FY 1999 Planned Program:

- 300 Develop and integrate expansion of ModSAF battlefield operating systems representation/upper echelon behavior capabilities.
- 906 Continue requirements generation for OneSAF.
- 180 Verification and validation of newly integrated software.
- Total 1386

Project DC78

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RD&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604760A Distributive Interactive Simulations - Engineering Development

PROJECT
DC78

A. Project Cost Breakdown				<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>			
Engineering Development and Integration					3392	1106			
Verification and Validation					485	280			
Total				0	3877	1386			
<u>B. Budget Acquisition History and Planning Information</u>									
Performing Organizations									
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	Budget to Complete
Product Development Organizations									
Miscellaneous	Various	Various	TBD	TBD	0	0	1125	300	Cont'd
Lockheed-Martin	DO/CPAF	Dec 98	TBD	TBD	0	0	700	400	Cont'd
Inc., Orlando, FL									
Support and Management Organizations									
Miscellaneous	Various	Various	TBD	TBD	0	0	1707	506	Cont'd
Test and Evaluation Organizations									
Miscellaneous	Various	Various	TBD	TBD	0	0	345	180	Cont'd
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									

Project DC78

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BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
5 - Engineering and Manufacturing Development		0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)		D909						
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D909 Tactical Exploitation of National Capabilities - Eng Dev		14839	17807	44674	79740	56213	92231	77255	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project supports the engineering development/enhancement of the Electronic Tactical User Terminal (ETUT), Mobile Integrated Tactical Terminal (MITT), Forward Area Support Terminal (FAST), Advanced Electronic Processing Dissemination System (AEPDS) and Tactical Exploitation System (TES). The Army's emerging TES will incorporate the standards and protocols dictated by the Common Imagery Ground/Surface System (CIG/SS) program. TES brings all of the existing and emerging Army TENCAP capabilities (AEPDS, MIES, and ETRAC) into an integrated common baseline; downsized, modular and scaleable to meet a wide range of contingency requirements. TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems [including MIES and ETRAC that are funded under the Defense Airborne Reconnaissance Program (DARP) (PE 0305154D)]. Specific details are provided in the Tactical Intelligence and Related Activities (TIARA) Congressional Justification Book, Volume II and in the Army TENCAP Master Plan. This PE supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: As pioneers in streamlined acquisition, ASPO's success in delivering systems as those described above to warfighters can be directly attributed to an environment emphasizing stable funding, low density acquisition, minimal use of MILSPECS, and managed competition. By tailoring existing technology, leveraging the best commercial practices, and using commercial and government-off the shelf software, ASPO minimizes risk while maximizing efficiency. Finally, dedicated cradle to grave Integrated Logistics Support (ILS) for TENCAP systems is accomplished through a coordinated effort by Government and contractor personnel and facilities.

FY 1997 Accomplishments:

- 4481 Continued software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit National capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products.
- 5106 Continued engineering development of TES.
- 2343 Completed effort to combine ETUT and EPDS capabilities into AEPDS.
- 2909 Continued support to TENCAP program management and administrative activities [e.g. FFRDC (Aerospace), ARL support, ASPO support, Army Topographic Engineering Center (TEC) and Contractor SETA support].

Total 14839

Project D909

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

D909

FY 1998 Planned Program:

- 6965 Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit National capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. In addition to staying current with National and Theater capabilities, will include integration of Global Broadcast System (GBS) and the Joint Tactical Terminal (JTT) into the TENCAP systems.
- 8640 Continue engineering development of TES.
- 1761 Continue support to TENCAP program management and administrative activities [e.g. FFRDC (Aerospace), ARL support, ASPO support, Army Topographic Engineering Center (TEC) and Contractor SETA support].
- 441 Small Business Innovative Research/Small Business Technology Transfer Programs.
- Total 17807

FY 1999 Planned Program:

- 19951 Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit National capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. In addition to staying current with National and Theater capabilities, will include integration of Global Broadcast System (GBS) and the Joint Tactical Terminal (JTT) into the TENCAP systems.
- 18379 Continue engineering development of TES.
- 6344 Continue support to TENCAP program management and administrative activities (e.g. FFRDC (Aerospace), ARL support, ASPO support, Army Topographic Engineering Center (TEC) and Contractor SETA support).
- Total 44674

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	15235	19113	19531
Appropriated Value	14869	19113	
Adjustments to Appropriated Value	-30	-1306	
FY 1999 President's Budget	14839	17807	44674

Change Summary Explanation: FY 1999 increase (+25143) All efforts previously funded under 6063766A/project 909 were consolidated into this PE/project.

Project D909

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		DATE							
5 - Engineering and Manufacturing Development		February 1998							
		PROJECT D909							
		PE NUMBER AND TITLE							
		0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)							
C. Other Program Funding Summary		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Total Cost
RDTE, A Budget Activity 4									
PE0603766, A Project D907 TENCAP - Adv Dev		24714	19566	0	0	0	0	0	0
RDTE, D Budget Activity 7									
PE 0305154D, Project P531 DARP		49395	0	0	0	0	0	0	0
PE 0305208D, Project PD8Z DARP		0	30377	29924	23558	24768	24216	23837	Cont
Other Procurement Army, OPA-2									
BZ7315 TENCAP		1818	1679	1690	4460	13225	14204	16101	Cont
Procurement, Defense Wide									
PE 0305154D DARP		89945	0	0	0	0	0	0	0
PE 0305208D DARP		0	94070	75857	74281	64267	65468	66678	Cont
D. Schedule Profile									
1		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	
Complete and Field DAMA Applique into SUCCESS Radios		2	3	4	1	2	3	4	
Complete Development and fielded AEPDS			X*			X			
Initiate integration of GBS into AEPDS and TES				X					
Initiate migration of JTT into AEPDS and TES							X		
Complete integration of GBS into AEPDS and TES								X	
Complete Prototype Development of TES-Forward									
Complete integration of DSN/DMS into TENCAP Systems							X		
* Denotes completed milestones									

Project D909

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

D909

	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown			
AEPS	2343	0	0
TES	5106	8640	18379
Common Baseline (*1)	4481	6965	19951
FFRDC	1220	1274	1403
Systems Engineering (Contractor)	1689	487	1030
Systems Engineering (Government)	0	0	1500
ASPO In-house(*2)	0	0	2411
SBIR/STTR	0	441	0
Total	14839	17807	44674

(*1) TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems [including MIES and ETRAC that are funded under the DARP (PE 0305154D)]

(*2) Approximately 40% of program management cost in FY 1997 through FY 1999 support efforts being developed under PE 0305154D.P531 and PE 0305308D.PD8Z.

B. Budget Acquisition History and Planning Information Not Applicable

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)							DATE		February 1998		
BUDGET ACTIVITY			PE NUMBER AND TITLE								
5 - Engineering and Manufacturing Development			0604768A Brilliant Anti-Armor (BAT) Submunition								
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	161583	229389	134858	160363	120582	53841	19339	0	1822612	
	D641 BAT	79252	78440	17239	16381	0	0	0	0	1020227	
	D687 BAT P31	15523	62376	65588	70835	55824	9514	4488	0	334316	
	D688 ATACMS BLK II	66803	88573	41496	23981	12684	0	0	0	296827	
	D686 ATACMS BLK IIA	0	0	10282	43863	52074	44327	14851	0	165397	
	D2NT BAT Operational Test	5	0	253	5303	0	0	0	0	5845	

Mission Description and Budget Item Justification: The BAT is the submunition in the Block II missile system that supports the Army's deep fire doctrine that calls for the destruction and disruption of threat forces and long range weapons at ranges in excess of 100 kilometers before they can influence the maneuver battle. In the past, the only options have been to engage these targets with attack helicopters or fixed wing aircraft. While effective, these options place critical resources and their air crews at risk. The BAT system significantly reduces this risk through its autonomous acquisition and terminal guidance capabilities to attack well-defended armored forces behind enemy lines. The BAT system includes the BAT submunition, a pre-planned product improvement (P3I) BAT submunition, the Army Tactical Missile System Block II (ATACMS BLK II) missile, and the ATACMS BLK IIA missile. BAT is a dual-sensor (acoustic and infrared) submunition that autonomously seeks out and destroys moving armored vehicles. It is an unpowered, aerodynamically stable vehicle, approximately 36 inches long, 5.5 inches in diameter and weighs 44 pounds. BAT and BAT P3I submunitions are carried deep into enemy territory by the two Army TACMS variants, then dispensed over a large target array to selectively attack and destroy individual targets. The BAT P3I program will improve the sensor and warhead subassemblies to increase lethality and to enable the BAT submunition to attack cold, stationary, armored targets and other critical high priority targets. The ATACMS BLK II missile is a version of the currently fielded and combat-proven Army TACMS Block I missile and is designed to carry 13 BAT or BAT P3I submunitions. The ATACMS BLK IIA missile is an extended range version of the ATACMS BLK II missile and will carry 6 BAT P3I submunitions out to ranges in excess of 200 kilometers. The projects in this Program Element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D641

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D641 BAT	79252	78440	17239	16381	0	0	0	0	1020227

A. Mission Description and Budget Item Justification: Project D641-BAT: The BAT submunition is an unpowered, aerodynamically stable vehicle approximately 36 inches long, 5.5 inches in diameter, and weighs 44 pounds. The BAT is an acoustic and infrared terminally guided submunition that searches for, tracks, and destroys moving armored combat vehicles. BAT submunitions are carried deep into enemy territory by a variant of the Army Tactical Missile System (ATACMS Block II), then dispensed over concentration of critical high-payoff targets to selectively attack and destroy individual targets. By utilizing acoustic technology, BAT has the advantage of an extremely large footprint, which allows it to compensate for target location errors. Being a certified round, the Block II with BAT submunitions has a low sustainment cost.

Acquisition Strategy: The BAT system is a sole source EMD program.

FY 1997 Accomplishments:

- 66994 Conducted EMD Program
- 5458 Conducted Carrier Integration Activities and other studies
- 6800 Conducted Test Range and Target Operations, Maintenance and Improvements
- Total 79252

FY 1998 Planned Program:

- 39837 Conduct EMD Program and complete CDT/conduct PPVT
- 22757 First increment to procure Initial Operational Test and Evaluation (IOT&E)/Formal Live Fire Test (FLFT) Hardware
- 10533 Support Carrier Flight Testing and Other Integration Activities
- 3147 Conduct Test Range and Target Operation, Maintenance and Improvement
- 200 Trade studies and system improvement and optimization activities
- 1966 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 78440

Project D641

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D641

FY 1999 Planned Program:

- 15739 Build Hardware to support Operational Test and Live Fire Test
- 585 Conduct Integration Activities
- 715 Conduct Test Range and Target Operation, Maintenance and Improvement
- 200 Trade studies and system improvement and optimization activities
- Total 17239

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	67186	46077	2548
Appropriated Value	67186	81077	
Adjustments to Appropriated Value	+12066	-2637	
FY 1999 President's Budget	79252	78440	17239

Change Summary Explanation: Funding: FY 1997 funding adjusted for Congressionally approved reprogrammings and below threshold reprogramming (+12066).
 FY 1998 funding increased by Congress (+35000) and undistributed Congressional adjustments (-2637).
 FY 1999 - Restructure of the BAT Program (+14691).

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
Missile Procurement, Army			100425	156426	204944	187748	225188	989597	1864328
CA 6100 BAT									

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
Complete Wind Tunnel/Sled Tests	1	2	3	4	1	2	4
Complete Functional Conf Audit (FCA)							
Complete CDT and PPVT							
Award Test Hardware Contract (THC)							
Award LRIP I Contract (MIPA)							
Block II/BAT LRIP DAB							
THC First Article Testing							
First Pilot Line Deliveries							
* Milestone completed.							

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D641

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Prime Contractor/Productibility Activity	65139	64971	14722
Developmental Test & Evaluation	4160	2515	525
Program Management Spt	3318	3239	495
Program Management Personnel	6635	5749	1497
SBIR/STTR		1966	
Total	79252	78440	17239

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Northrop	SS/CPAF/	5 Jun 91			631857	65139	64971	14722	12306	788995
Grumman Corp	CPFF/CPIF/ FPIF									
SBIR/STTR										
In-House Support	PO	Oct 97/8/9			63981	6635	5749	1497	200	78062
Support and Management Organizations										
Sys Eng Tech	SS/CPFF	Nov97/8/9			54991	3155	2702	495	000	61343
Assist & Program Mgmt Spt										
Misc Oth Gov Act	PO	Oct 97/8/9			44771	163	537	000	000	45471
Test and Evaluation Organizations										
Range Support	PO	Oct 97/8/9			18617	2225	1500	325	3600	26267
Other Test	PO	Oct 97/8/9			14698	1935	1015	200	275	18123

Government Furnished Property: Not applicable.

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development		0604768A Brilliant Anti-Armor (BAT) Submunition				D641
		Total				
		Prior to			Budget to	Total
		FY 1997	FY 1997	FY 1998	FY 1999	Complete
						Program
	Subtotal Product Development	695838	71774	72686	16219	869023
	Subtotal Support and Management	99762	3318	3239	495	106814
	Subtotal Test and Evaluation	33315	4160	2515	525	44390
	Total Project	828915	79252	78440	17239	16381
						1020227

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D687

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D687 BAT P3I	15523	62376	65588	70835	55824	9514	4488	0	334316

A. Mission Description and Budget Item Justification: Project D687-BAT P3I: The BAT P3I submunition maintains the BAT length, diameter, and weight configurations. The BAT P3I is a multi-sensored, terminally guided submunition that searches for, tracks, and destroys specific targets including mobile armored combat vehicles, cold stationary armored combat vehicles, Surface-to-Surface missile (SSM) Transporter Erector Launchers (TELs), and Heavy Multiple Rocket Launchers (MRL). BAT P3I submunitions are carried deep into enemy territory by variants of the Army Tactical Missile System (ATACMS), then dispensed over numerous high-payoff target concentrations to selectively attack and destroy individual targets. BAT P3I is intended to increase submunition lethality and expand the target set to be attacked. Being a certified round, the Block II and IIA missile carrying the BAT P3I submunition has a low sustainment cost. This program will incorporate new seeker, warhead, and microprocessor technologies into the current BAT configuration while maintaining the current BAT form, fit and maximum commonality of BAT components. This program includes studies/demos pertaining to technology advancements, alternate carriers, target recognition, and acoustic/infrared/millimeter wave characterization of expanded target sets.

Acquisition Strategy: The BAT P3I system completed the Program Definition and Risk Reduction (PDRR) program and will begin engineering manufacturing development in FY 1999.

FY 1997 Accomplishments:

- 12399 Conducted P3I PDRR program
- 1500 Receipt and Assembly of Major Components of the Hardware-in-the-Loop (HWIL) Facility
- 915 Developed Warhead Lethality Models
- 609 Conducted Captive Flight Test (CFT)
- 100 Trade studies, CAIV initiatives, and system improvement and optimization activities
- Total 15523

FY 1998 Planned Program:

- 50985 Continue System Development and P3I PDRR Program
- 1831 Continue Simulation and Testing Program
- 3126 Conduct CFTs
- 2100 Integrate and Test Seekers in the Hardware-in-the-Loop Facility

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D687

FY 1998 Planned Program: (continued)

- 2571 Conduct Warhead Testing
- 200 Trade studies, CAIV initiatives, and system improvement and optimization activities
- 1563 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 62376

FY 1999 Planned Program:

- 37988 Complete P3I PDRR Program, Begin EMD
- 17500 EMD Test Hardware
- 4300 Conduct CFT's
- 3200 Continue Hardware-in-the-Loop Seeker Assessments
- 2400 Conduct Simulations and Algorithm Development
- 200 Trade studies, CAIV initiatives, and system improvement and optimization activities
- Total 65588

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
18819	64556	70774
18819	64556	
-3296	-2180	
15523	62376	65588

Change Summary Explanation: Funding:

FY 1997 funding adjustment due to reprogramming to higher priority programs (-3296).

FY 1998 funding adjustment due to undistributed Congressional reductions (-2180).

FY 1999 - Inflation adjustment (-5186) [NOTE: Database administrative error resulted in excessive adjustment for lower inflation. Will be corrected by below-threshold adjustment during FY 1999.]

C. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT	
5 - Engineering and Manufacturing Development		0604768A Brilliant Anti-Armor (BAT) Submunition										D687	
D. <u>Schedule Profile</u>		FY 1997		FY 1998		FY 1999							
1		2	3	4	1	2	3	4					
Captive Flight Tests (CFT)		X*				X							
Warhead Testing								X					
Hardware-in-the-Loop Testing													
Milestone II								X					
EMD CFT									X				
Seeker Critical Design Review										X	X		
*Milestone completed.													

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development		0604768A Brilliant Anti-Armor (BAT) Submunition		D687		
A. Project Cost Breakdown						
Prime Contractor Activity		FY 1997	FY 1998	FY 1999		
Developmental Test & Evaluation		10243	40000	48020		
Program Management Support		1318	6425	7680		
Program Management Personnel		938	4480	1295		
SBIR/STTR		3024	9908	8593		
Total		15523	1563	65588		
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or Contract						
Government Method/Type						
Performing or Funding						
Activity Vehicle						
Award or Obligation						
Date						
Performing Activity						
EAC						
Product Development Organizations						
Northrop SS-CPIF						
Dec 97						
Grumman Corp						
SBIR/STTR						
In-House Support PO						
Oct 97/8/9						
Support and Management Organizations						
SETA & Prog SS-CPIF						
Nov 97/8/9						
Mgmt Spt						
MISC OGA PO						
Oct 97/8/9						
Activities						
Test and Evaluation Organizations						
Range Support PO						
Oct 97/8/9						
Other Test PO						
Oct 97/8/9						
Activities						
*Includes HWIL support						
Government Furnished Property: Not applicable.						
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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT			D687
5 - Engineering and Manufacturing Development	0604768A Brilliant Anti-Armor (BAT) Submunition				
	Total				
	Prior to				
	FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete
	45458	13267	51471	56613	106887
Subtotal Product Development	3055	938	4480	1295	273696
Subtotal Support and Management	1655	1318	6425	7680	14993
Subtotal Test and Evaluation	50168	15523	62376	65588	45627
Total Project					334316
					Total Program

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604768A Brilliant Anti-Armor (BAT) Submunition								D688	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D688	ATACMS BLK II	66803	88573	41496	23981	12684	0	0	0	296827	
<p>A. Mission Description and Budget Item Justification: Project D688-Army Tactical Missiles System Block II: The Army Tactical Missile System Block II (ATACMS BLK II) is a ground launched, solid propellant, inertially guided Global Positioning System (GPS) aided missile system with 13 BATs or P3I BATs as its payload. The mission of the ATACMS BLK II is to delay, disrupt, neutralize, or destroy armored combat vehicles and other critical high-payoff targets. Once the BAT P3I submunition is incorporated into the ATACMS BLK II, the target set will expand to include cold stationary armored combat vehicles, moving armored combat vehicles, heavy multiple rocket launchers and missile transporter/launchers. ATACMS BLK II will carry and dispense BAT and BAT P3I submunitions deep in enemy territory where these submunitions will autonomously track and destroy numerous critical high-payoff targets. GPS technology will increase accuracy in flight, mitigating target location errors. ATACMS BLK II will be launched from the M270A1 launcher. Further, these funds will allow for trade studies/demonstrations pertaining to technology advancements, payload variants, propulsion, guidance and control, and fire control improvements.</p> <p>Acquisition Strategy: The Army Tactical Missile System Block II is a sole source, performance specification program.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 63109 Conducted EMD Program to include Preliminary Design Review (PDR), Critical Design Review (CDR) and Block II/BAT Integration Activities 400 Conducted Sled Tests (OGA) 1100 Conducted Engineering Development Test (EDT) Flight 570 Prepared for and begin Production Proveout Test (PPT) Flight Program (OGA) 1374 Began Command and Control Software Design, Development and Test 250 Trade studies and system improvement and optimization activities Total 66803 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 14000 Begin Pilot Production Line and Begin IOT&E Activities 64277 Continue EMD Including Submunition Integration 5010 Complete Production Proveout Test (PPT) Flights /Begin Preproduction Qualification Test (PQT) Flights 350 Conduct "Interim" Launcher Integration Tests 2465 Continue Command and Control Software Design, Development and Test 											

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PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D688

FY 1998 Planned Program: (continued)

- 250 Trade studies and system improvement and optimization activities
- 2221 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
- Total 88573

FY 1999 Planned Program:

- 33133 Continue EMD and Subsystem Qualification
- 3189 Complete PQT and conduct Dev Test/Op Test Flight Tests
- 1073 Conduct M270A1 Integration Tests
- 1451 Conduct C4I System Integration Tests
- 1300 Continue Command and Control Software Design, Development and Test
- 1100 Prepare for and conduct DT/OT
- 250 Trade studies and system improvement and optimization activities
- Total 41496

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
75806	91669	44777
75806	91669	
-9003	-3096	
66803	88573	41496

Change Summary Explanation: Funding:

FY 1997 funding adjustment due to reprogramming to higher priority programs (-9003).

FY 1998 funding adjusted for undistributed Congressional adjustments (-3096).

FY 1999 - Inflation Adjustment (-3281). [NOTE: Database administrative error resulted in excessive adjustment for lower inflation. Will be corrected by below-threshold adjustment during FY 1999.]

C. Other Program Funding Summary

Missile Procurement, Army
CA 6105 ATACMS BLK II

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
		49083	66675	98753	99440	120484	555119	989554

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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PE NUMBER AND TITLE

0604768A Brilliant Anti-Armor (BAT) Submunition

D688

<u>D. Schedule Profile</u>	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Sled Test	X*											
CDR			X*									
PDR	X*											
EDT Flight Test					X*							
PPT Flight Test					X*	X						
PQT Flight Test												
DT/OT Flight Test							X	X	X			
Block II/BAT LRIP DAB										X		
Award LRIP Contract (MIPA)									X			X

***Milestone Completed**

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D688

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Prime Contractor Activity	51442	57424	22494
Development Test & Eval	3446	11934	8312
Program Management Spt	4836	7739	4172
Program Management Personnel	7079	9255	6518
SBIR/STTR		2221	
Total	66803	88573	41496

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
LMV	SS/CPFF	Jul 95			54523	51442	57424	22494	8525	194408
SBIR/STTR							2221			2221
In-House Support	PO	Oct 97/8/9			5452	7079	9255	6518	8121	36425
Support and Management Organizations										
SETA & Program	SS/CPFF	Oct 97/8/9			2024	1155	1929	1541	2180	8829
Mgmt Spt										
Misc OGA	PO	Oct 97/8/9			512	3681	5810	2631	1899	14533
Activities										
Test and Evaluation Organizations										
Range Support	PO	Oct 97/8/9			450	2465	7000	3987	9852	23754
Other Test Activity	PO	Oct 97/8/9			329	981	4934	4325	6088	16657
Subtotal Product Development										
					59975	58521	68900	29012	16646	233054
Subtotal Support and Management										
					2536	4836	7739	4172	4079	23362
Subtotal Test and Evaluation										
					779	3446	11934	8312	15940	40411
Total Project										
					63290	66803	88573	41496	36665	296827

Project D688

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																					
5 - Engineering and Manufacturing Development		0604768A Brilliant Anti-Armor (BAT) Submunition								D686																																					
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																					
D686	ATACMS BLK IIA	0	0	10282	43863	52074	44327	14851	0	165397																																					
<p>A. Mission Description and Budget Item Justification: Project D686-Army TACMS Block IIA: The Army TACMS Block IIA (ATACMS Block IIA) will be a ground launched, solid propellant, inertially guided Global Positioning System (GPS) aided missile system with 6 BAT P3I submunitions as its payload. The ATACMS Block IIA will be launched from the M270A1 launcher in response to the same Command and Control (C2) systems applicable to the Block I, Block IA, and Block II missiles. Since the Block IIA payload contains 6 submunitions rather than 13, as in the Block II, it doubles the range of Block II. The mission of the ATACMS Block IIA will be to delay, disrupt, or destroy the Block II target sets plus cold stationary tanks and armored combat vehicles as well as moving and stationary surface-to-surface missile (SSM) transporter erector launchers (TELs) at extended ranges. The Block IIA missile will dispense 6 BAT P3I submunitions at ranges beyond the Block II system.</p> <p>Acquisition Strategy: The Army Tactical Missile System Block IIA is a sole source, performance specification program.</p> <p>FY 1997 Accomplishments: Project not funded in FY 1997</p> <p>FY 1998 Planned Program: Project not funded in FY 1998</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 8425 Initiate and Conduct EMD Program; Conduct Submunition Integration Activities 1857 Conduct Test Range and Target Operation, Maintenance and Improvement Total 10282 <p>B. Project Change Summary</p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> <td>11094</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>0</td> <td>10282</td> </tr> </table> <p>C. Other Program Funding Summary</p> <table> <tr> <td>Missile Procurement, Army</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> <td>FY 2000</td> <td>FY 2001</td> <td>FY 2002</td> <td>FY 2003</td> <td>To Complete</td> <td>Total Cost</td> </tr> <tr> <td>CA 6110</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>6732</td> <td>53936</td> <td>473397</td> <td>534065</td> </tr> </table>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	0	11094	Adjustments to Appropriated Value				FY 1999 President's Budget	0	0	10282	Missile Procurement, Army	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost	CA 6110						6732	53936	473397	534065
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																																												
Appropriated Value	0	0	11094																																												
Adjustments to Appropriated Value																																															
FY 1999 President's Budget	0	0	10282																																												
Missile Procurement, Army	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost																																						
CA 6110						6732	53936	473397	534065																																						

Project D686

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - Engineering and Manufacturing Development	0604768A Brilliant Anti-Armor (BAT) Submunition		
	PROJECT D686		
<u>D. Schedule Profile</u>			
	FY 1997	FY 1998	FY 1999
1	2 3	2 3	2 3 4
			X
DA IPR MS II			X
EMD Contract			X

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

0604768A Brilliant Anti-Armor (BAT) Submunition

D686

A. Project Cost Breakdown				<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Prime Contractor Activity						6447
Development Test & Eval						1857
Program Management Spt						900
Program Management Personnel						1078
Total				0	0	10282
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or Government	Contract Method/Type or Funding	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	
	<u>Vehicle</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>	<u>FY 1997</u>	<u>FY 1998</u>
Product Development Organizations						
LMV	SS/CPFF					
In-House Support	PO	Oct 99				
Support and Management Organizations						
SETA & Program	SS/CPFF	Oct 99				
Mgmt Spt						
Test and Evaluation Organizations						
Range Support	PO	Oct 99				
Other Test	PO	Oct 99				
Activities						
Government Furnished Property: Not applicable.						
Subtotal Product Development						
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project						

Government Furnished Property: Not applicable.

Project D686

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D2NT

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2NT BAT Operational Test	5	0	253	5303	0	0	0	0	5845

A. Mission Description and Budget Item Justification: Project D2NT-OPTEC: Project D2NT finances the direct costs of planning and conducting operational testing and evaluation of the BAT submunition by the Operational Test and Evaluation Command (OPTEC). Operational testing is conducted under conditions, as similar as possible, to those encountered in actual combat with typical soldiers trained to employ the system. OPTEC provides the Army leadership with an independent test and evaluation of both the effectiveness and suitability of the system.

Acquisition Strategy: Not applicable.

FY 1997 Planned Program:

- 5 IOTE planning and preparation
- Total 5

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 253 IOTE planning and preparation
- Total 253

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

	FY 1997	FY 1998	FY 1999
	5	0	273
	5		
	5	0	253

C. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.

Project D2NT

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998	PROJECT	D2NT
BUDGET ACTIVITY		PE NUMBER AND TITLE		0604768A Brilliant Anti-Armor (BAT) Submunition	
5 - Engineering and Manufacturing Development					
D. <u>Schedule Profile</u>		FY 1997	FY 1998	FY 1999	
1	2	3	4	1	2
Planning & Preparation of IOTE Activities	X*			X	X
*Milestone completed					

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604768A Brilliant Anti-Armor (BAT) Submunition

D2NT

A. Project Cost Breakdown

Operational Test and Evaluation	FY 1997	FY 1998	FY 1999
	5	0	253
Total	5	0	253

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government	Method/Type	Award or Obligation	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--------------------------	-------------	---------------------	---------------------	----------------	------------------------	---------	---------	---------	--------------------	---------------

Activity Vehicle Date
 Product Development Organizations: None
 Support and Management Organizations: None
 Test and Evaluation Organizations

Other Test Activities	PO	Oct 97/9	284	5	0	253	5303	5845
-----------------------	----	----------	-----	---	---	-----	------	------

Government Furnished Property: Not applicable.

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

284	5	0	253	5303	5845
284	5	0	253	5303	5845

Project D2NT

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604770A Joint Surveillance/Target Attack Radar

D202

System

COST (In Thousands)	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D202 Army Joint STARS (TIARA)	9406	6726	5503	4010	12135	17990	12179	Continuing	Continuing

A. Mission Description and Justification: This is a Tactical Intelligence and Related Activities (TIARA) program. The joint Army/Air Force program objective is to develop a radar, datalink, ground station, and airframe that will provide the capability to locate, track and classify tracked and wheeled vehicles beyond ground line-of-sight during the day, night and under most weather conditions. Radar data is distributed to ground station modules via a secure surveillance and control data link. The Army developed the initial ground components of the JSTARS under this PE/Project. The Ground Station Module (GSM) is being developed in a Block approach. Block I (GSM) utilizes the same prime mission equipment and was developed and deployed on different platforms. The Block I Medium GSM (MGSM) is housed in a standard S280 shelter and mounted on a 5 Ton Truck. The rapidly deployable Block I Light GSM (LGSM) is housed in a Standard Integrated Command Post Shelter (SICPS) and mounted on a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV). Included in this project is the development of the Block II GSM now called the Common Ground Station (CGS). The CGS will integrate signal, imagery, and other intelligence processing into a single ground station, resulting in enhanced battle management as well as significant cost savings. These enhancements are being implemented in a phased approach of Pre-Planned Product Improvement (P3I) initiatives and provide significant expansion of the system performance parameters. Specific enhancements include: integration of Secondary Imagery Dissemination, extended range Satellite Communications (SATCOM relay) capability, full on the move and manportable operations as well as integration/interface with other service/allied sensor systems. This program element supports development efforts in the Engineering and Manufacturing development phases of the Acquisition Strategy and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: In December 1995, the JSTARS Ground Station Program awarded an eight year [basic plus seven one year options] production contract to acquire the balance of ground stations required to meet Army needs. The first two years of the contract are Low Rate Initial Production (LRIP) with the first deliveries participating in a February 1998 Initial Operational Test. This test will support the Milestone III decision scheduled for July 1998. The contract also includes provisions for the design, development and test of various P3Is. Following P3I prove out, the modifications will be folded into the production contract via fixed price contract revisions. Those P3I enhancements initiated prior to the Full Production Decision (Milestone III) include Advanced Imagery Processing, Integration of Improved Data Modem (IDM) providing Army Aviation Command and Control (A2C2) interoperability and radar masking analysis tools. Following Milestone III, all P3Is will be implemented in block upgrades in accordance with the CGS System Improvement Plan (SIP).

FY 1997 Accomplishments:

- 1795 Completed Secondary Imagery Dissemination Integration
- 1850 Initiated Sensor(A2C2/Airborne Reconnaissance Low Integration (P3I)
- 5761 Initial Operation Test and Evaluation (IOT&E) Support
- Total 9406

Project D202

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604770A Joint Surveillance/Target Attack Radar

D202

System

FY 1998 Planned Program:

- 904 Continue Sensor Integration (P3I)
- 1103 Trainer/Training Enhancements
- 4565 IOT&E Support
- 154 Small Business Innovative Research/Small Business Technology Transfer Program
- Total 6726

FY 1999 Planned Program:

- 2814 Continue CGS Expanded Capability (P3I) Development
- 2033 Provide Additional Simulators/Embedded Training Capability
- 656 Test CGS Expanded Performance Capabilities(P3I)
- Total 5503

B. Project Change Summary

FY 1998/1999 Presidents Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999	FY 1999
9624	6940	5670	
9406	6940		
	-214		
9406	6726	5503	

C. Other Program Funding Summary

BA1080 Joint STARS (TIARA)

BS9724 Joint STARS Spares

NATO AGS C35

NATO AGS BA 1082

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
84719	91079	87229	88463	107017	31330	7087	Cont	Cont
8632	6313	8733	6335	6389	7093	4522	Cont	Cont
0	10225	6405						
0	611	0						

D. Schedule Profile

Start CGS Technical Test

First CGS LRIP Delivery

Initial CGS Operator Training

Conduct Final CGS Technical Test

FY 1997	FY 1998	FY 1999	FY 1999
1	2	3	4
X*			
	4	1	4
	2	3	3
			4

X*

X

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY					DATE				
5 - Engineering and Manufacturing Development					February 1998				
					PROJECT D202				
					0604770A Joint Surveillance/Target Attack Radar				
					System				
D. <u>Schedule Profile</u>					FY 1998				
					FY 1999				
					1	2	3	4	
Complete CGS Operational Test(IOT&E)									
Prepare CGS Operator Test Report									
CGS SIP Approval									
Milestone III									
Start CGS Expanded Capability									
Start Simulators/Embedded Training									
Initial P3I Technical Test									
Initial P3I Operational Assessment									
*Milestone Completed									

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BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE	PROJECT
RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		0604770A Joint Surveillance/Target Attack Radar		February 1998	D202
5 - Engineering and Manufacturing Development		System			
A. Project Cost Breakdown					
Hardware Development	FY 1997	FY 1998	FY 1999		
Software Development	1192	498	2135		
Integrated Logistics Support	2298	885	2095		
Developmental/Operational Test and Evaluation	75	105	195		
Contractor Engineering Support	5088	4565	525		
Government Engineering Support	54	109	101		
Program Management Support	13	72	79		
Program Management Personnel	149	70	86		
SBIR/STTR	537	268	287		
Total	9406	6726	5503		
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or Government	Method/Type	Award or Obligation	Performing Activity	Project Office	Total
Performing Activity	Vehicle	Date	EAC	FY 1997	FY 1998
Product Development Organizations					
Motorola	SS/CPFF	Nov 95	10063	8339	1076
(96-C-S201)					
Motorola	C/FP	Dec 95	38000	37920	3349
(96-C-S204)					
Support and Management Organizations					
CECOM	MIPR			13	79
Proj Management				686	373
Misc.				54	101
SBIR/STTR				154	
Test and Evaluation Organizations					
Texcom	MIPR			2225	2315
OEC	MIPR			913	250
USAF	MIPR				850
Project D202					

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604770A Joint Surveillance/Target Attack Radar

PROJECT

D202

Government Furnished Property: Not applicable

Subtotal Product Development	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	5515	2792	4425	Cont	Cont
Subtotal Support and Management		519	553	Cont	Cont
Subtotal Test and Evaluation		3415	525	Cont	Cont
Total Project	547600	6726	5503	Cont	Cont

Project D202

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
5 - Engineering and Manufacturing Development		0604778A Positioning Systems Development (SPACE)								D168			
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost			
D168 NAVSTAR Global Positioning System (GPS) Equipment		417	407	379	419	408	0	0	0	2030			
<p>A. Mission Description and Budget Item Justification: Project D168 provides for Army participation in the research and development phases of Army weapon systems requiring POS/NAV capabilities. It provides for the engineering development of several alternatives for integration of GPS receivers into selected systems. These alternatives include, but are not limited to, Embedded/Integrated GPS, Advanced GPS Receivers (AGR), Tactical GPS Anti-Jam Technology (TGAT) and Differential GPS. The projects in this program element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.</p> <p>Acquisition Strategy: Perform studies and analyses of host vehicles to support development of alternative GPS applications.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 111 Improved accuracy and time to fix studies for follow-on equipment requirements • 150 Test program for NDI aviation GPS receiver (MAGR follow-on/replacement) • 156 Improved survivability of GPS capability (renewed anti-jam/anti-spoof and other threats response) <p>Total 417</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 120 Continue improved accuracy and time to fix studies • 111 Continue survivability studies • 165 Exploration of emerging capabilities based on follow-on satellite configuration options • 11 Small Business Innovative Research/Small Business Technology Transfer Program <p>Total 407</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 170 Continued exploration of emerging capabilities • 109 Support of miniaturization studies • 100 Studies on interfacing of GPS with other systems <p>Total 379</p>													

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604778A Positioning Systems Development
(SPACE)

D168

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997
428
417
417

FY 1998
419
419
-12
407

FY 1999
409

379

C. Other Program Funding Summary

K47800, Other Procurement, Army, NAVSTAR
GPS

FY 1997
26130

FY 1998
5432

FY 1999
6866

FY 2000
6689

FY 2001
32169

FY2002
32645

FY2003
49763

To
Complete
237000

Total
Cost
429694

D. Schedule Profile: Not applicable

Project D168

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development	0604778A Positioning Systems Development (SPACE)	D168		
A. Project Cost Breakdown				
Developmental Test and Evaluation	FY 1997	FY 1998	FY 1999	
	150	122	109	
Government Engineering Support	156	165	170	
Contractor Engineering Support	111	120	100	
Total	417	407	379	
B. Budget Acquisition History and Planning Information: Not applicable.				
Project D168				
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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604780A Combined Arms Tactical Trainer (CATT)									
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		29420	12880	7533	11551	7836	21697	28344	Continuing	Continuing	
D571 Close Combat Tactical Trainer		29420	12880	7533	11551	7836	5200	5400	0	281550	
D582 Engineer CATT		0	0	0	0	0	16497	22944	Continuing	Continuing	

Mission Description and Budget Item Justification: The Combined Arms Tactical Trainer (CATT) is a family of combined arms simulation systems designed to support the Army's simulation-based Combined Arms Training Strategy. The initial CATT system is the Close Combat Tactical Trainer (CCTT) which provides the underlying baseline (architecture, terrain data bases, after action review [AAR], semi-automated forces [SAF], and models/algorithms) for future CATT expansions. Synthetic Environment Core provides for the expansion of the CCTT Synthetic Environment baseline to include enhanced Aviation, Engineer, Fire Support, and Air Defense capabilities needed to support integration of hardware/simulators funded by System Program Managers. CATT enables units, from crew to the battalion task force level, to conduct a wide variety of combat tasks on a realistic, interactive synthetic battlefield. CATT's combination of manned simulators and staff officer workstations enables units to train as a combined arms team in a cost effective manner. CATT reinforces the successes and corrects the shortcomings of the Simulator Network (SIMNET) and Aviation Network (AIRNET) demonstration programs executed by the Defense Advanced Research Projects Agency (DARPA). By practicing skills in CATT, units are able to make more effective use of scarce and costly live fire and maneuver exercises as well as train tasks deemed too hazardous to conduct in the field. Fielded in both fixed site and mobile/transportable versions, CATT enables both Active and Reserve component units to prepare for real world contingency missions. Units taking their CATT systems with them on operational deployments, such as peacekeeping missions, are able to sustain essential warfighting skills when not at their home station. By being able to process a wide array of terrain data bases and modify the behavior of the computer generated opposing forces, CATT offers a virtually unlimited array of training options to support the Army's many regional contingency missions. The combination of tough field and live fire training and realistic simulation training in CATT is the catalyst to prepare soldiers and their leaders for the uncertainties they will face in an unpredictable world. The projects in this program element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604780A Combined Arms Tactical Trainer (CATT) D571

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D571 Close Combat Tactical Trainer	29420	12880	7533	11551	7836	5200	5400	0	281550

A. Mission Description and Justification: Project D571 - Close Combat Tactical Trainer: Provides for engineering and manufacturing development (EMD) and pre-planned product improvements for the Close Combat Tactical Trainer (CCTT) which will enhance readiness of both active and reserve component forces. The program will develop a networked system of interactive computer driven simulators, emulators and semi-automated forces that replicate combat vehicles and weapon systems, combat support systems, combat service support systems, and command and control systems to create a fully integrated real-time collective task training environment. This trainer will allow soldiers to practice, repetitively, techniques which, if performed on real equipment, would be too hazardous, time-consuming and expensive. These trainers enhance realism and allow soldiers and units to learn tactical combat lessons on maneuver, command and control, and improved teamwork for increased survivability.

Acquisition Strategy: Competitive cost plus award fee contract for EMD phase. Competitive procurement against performance specifications as part of basic contract.

FY 1997 Accomplishments:

- 27109 Completed deliveries, completed final functionality, planned and executed Limited User Test prepared for Initial Operational Test and Evaluation (IOT&E), corrected deficiencies from testing, completed documentation and audit trail, and prepared for Pre-Planned Product Improvements.
- 1921 Maintained support services to the program office.
- 390 Provided government program management, engineering, technical and contract support.
- Total 29420

FY 1998 Planned Program:

- 11150 Conclude functionality integration and test, conduct and support IOT&E.
- 343 Maintain support services to the program office. Prepare for MSIII decision 1st QTR FY99
- 1064 Provide government program management, engineering, technical and contract support.
- 323 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR).
- Total 12880

FY 1999 Planned Program:

- 6592 Execute Training Support Package, relocation of simulators, Engineering Change Proposals (ECPs) and Pre-Planned Product Improvements.
- 527 Maintain support services to the program office.
- 414 Provide government program management, engineering, technical and contract support.
- Total 7533

Project D571

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UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604780A Combined Arms Tactical Trainer (CATT)

PROJECT

D571

A. Project Cost Breakdown

<u>A. Project Cost Breakdown</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Lockheed/Martin Development	23363	9411	0
Lockheed/Martin Program Management/System Engineering	3746	1739	0
Program Office/Technical Support	202	1042	527
Government Agency Support	188	22	0
Support Contracts	1921	343	414
Engineering Changes/P31/TSP/simulator relocation	0	0	6592
SBIR/STTR		323	
Total	29420	12880	7533

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget to Complete		Total Program
						FY 1997	FY 1998	

Product Development Organizations

Lockheed/Martin	C-CPAF/	Oct 97	214945	214945	164032	27109	11150	6592	26988	235871
	T&M/FFP									

Support and Management Organizations

Organization	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414
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Government Furnished Property: None

Subtotal Product Development	164032	27109	11150	6592	26988	235871
Subtotal Support and Management	37698	2311	1730	941	2999	45679
Subtotal Test and Evaluation						
Total Project	201730	29420	12880	7533	29987	281550

Project D571

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Exhibit R-3 (PE 0604780A)

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604801A Aviation - Engineering Development								DC45	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DC45 Aircrew Integrated Systems (ACIS) - ED		4331	4951	6599	6508	9638	3745	2235	Continuing	Continuing	

A. Mission Description and Budget Item Justification: Project DC45 Aircrew Integrated Systems (ACIS) - Engineering Manufacturing Development (EMD) This project provides engineering and manufacturing development for those systems and items of equipment which are unique and necessary for the sustainment, survivability, and performance of Army aircrews and troops on the future integrated battlefield and related training missions. EMD programs will focus on air vehicle integration, airworthiness qualification and user evaluation of multiple technologies to improve aircrew mission performance, aircrew comfort, aircrew and aircrew station interface, safety, and survivability. These programs include: advanced laser protection against emerging new threat systems; product improvements to existing helmets to improve performance and increase commonality; development and adaptation of airbag technology to Army aircraft to improve crash protection and enhance aircrew survivability; and follow-on air vehicle integration and test of Air Warrior program effort to enhance and maximize aircrew performance in force modernized aircraft. Maximum advantage will be taken of simulation to reduce program technical risk through early user evaluation and to reduce program design and test cost and schedules. Both joint and service independent efforts will be pursued under the scope of this project. This Program Element supports research efforts in the EMD phase of the Acquisition Strategy and is correctly placed in Budget Activity 5. Both joint and service independent efforts will be pursued under the scope of this project.

Acquisition Strategy: The Cockpit Air Bag Systems (CABS) B-kit components will be competitively procured using an approved performance specification and interface drawings (except that the initial production quantity will be procured sole-source from the developer.) The CABS A-kit hardware will be aircraft specific and will be procured competitively. CABS will be installed via field retrofit and production line incorporation (where applicable.) Pre-Planned Product Improvement of the helmet is awarded, as required, to the helmet developer, Gentex Corp. Performance specifications for the joint service advanced laser eye protection program are being developed and will be used for production competition. A competitive Air Warrior Program Definition and Risk Reduction (PDRR) development contract was awarded in FY 97 to perform a functional requirements analysis and consider user requirements and available technologies to optimize recommended alternatives within the constraints of cost as an independent variable. During a combined PDRR and EMD phase, the contractor will develop the Air Warrior systems and integrate those systems with the force modernization aircraft. Prototypes that represent the final Air Warrior configuration will be developed for test and evaluation.

FY 1997 Accomplishments:

- 3083 Continued EMD for UH-60 Cockpit Air Bag System (CABS)
- 898 Continued AIHS P³I efforts in EMD
- 350 Continued Advanced Laser Eye Protection (Joint Service) EMD
- Total 4331

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PROJECT

5 - Engineering and Manufacturing Development

0604801A Aviation - Engineering Development

DC45

FY 1998 Planned Program:

- 1593 Complete UH-60 Cockpit Air Bag System pre-production evaluation and testing
- 3246 Initiate Air Warrior EMD effort
- 112 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 4951

FY 1999 Planned Program:

- 6599 Continue Air Warrior EMD effort
- Total 6599

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	5403	5109	6067
Appropriated Value	5282	5109	
Adjustments to Appropriated Value	-951	-158	
FY 1999 President's Budget Request	4331	4951	6599

Change Summary Explanation:

Funding: FY 1997: Reprogrammed to higher priority requirements (-951)

Funding: FY 1998: Undistributed Congressional reductions (-158)

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
RDTE, A BA 4 PE 0603801A Proj DB45, ACIS	6665	9250	2472	0	0	2856	2887		
AD									
Aircraft Procurement, Army (APA) (ACIS) SSN	11286	12190	9050	4470	1445	21468	35214	Cont	Cont
AZ3110									

Project DC45

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604801A Aviation - Engineering Development

DC45

D. Schedule Profile

UH-60 Cockpit Air Bag System (CABS)

Design Review

Component testing

Design Validation testing

Component Redesign

Evaluate Redesigned component

Contractor testing

Government Test Redesigned component

AIHS P³I

Continue Head Tracker breadboard

prototype EMD

Airworthiness testing

Flight test and completed EMD

Airworthiness test of prototype

Flight Test breadboard on AH-64

Advanced Laser Eye Protection (LEP)

Conceptual design review

Early prototype delivery

Initiate optical testing

Evaluate holographic production design

Air Warrior

Begin EMD

Assimilate Helmet Mounted Display, LEP,

and Electronic Data Module technology

Electronic Data Module breadboard

Preliminary Design Review for Air

Warrior

Critical Design Review

Define Air Warrior ensemble initial

prototype

Initial Air Warrior ensemble prototype

development begins

* Denotes milestone completed

Project DC45

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604801A Aviation - Engineering Development

DC45

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development Organizations	3177	3939	5088
Support and Management Organizations	661	712	843
Test and Evaluation Organizations	493	300	668
Total Project DC45	4331	4951	6599

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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Product Development Organizations

UH-60 CABS, Simula, Phoenix, AZ	SS-CPFF	May 1996		5273	1734	1989	1550			5273
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AIHS P ³ I, Gentex, Carbondale, PA	SS-CPFF	Dec 1997	873	873		873				873
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Advanced LEP, AOTEC - South Bridge, MA	SS-CPFF	Jan 1997	315	315		315				315
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Air Warrior, contractor TBD	C-CPFF	Jan 1998					2389		Cont	Cont
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Miscellaneous	SS/C-CPFF	Thru FY 1997		9959					5056	9959
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Support and Management Organizations

Various Organizations	MIPR	Various			8583	661	712	843	Cont	Cont
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Test and Evaluation Organizations

Government Agencies	MIPR				3229	493	300	700	Cont	Cont
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Project DC45

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RD T&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604801A Aviation - Engineering Development

PROJECT

DC45

Government Furnished Property: Not Applicable

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program Cont
Subtotal Product Development Organizations	11693	3177	3939	5056	Cont	Cont
Subtotal Support and Management Organizations	8583	661	712	843	Cont	Cont
Subtotal Test and Evaluation Organizations	3229	493	300	700	Cont	Cont
Total Project	23505	4331	4951	6599	Cont	Cont

Project DC45

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	21567	14611	37725	31115	30742	23732	11404	Continuing	Continuing	
D134	Objective Individual Combat Weapon Engineering Development (OICW)	0	0	0	1777	1765	3744	4632	Continuing	Continuing	
D284	Multipurpose Individual Munition	7450	2831	16624	16150	9716	0	0	0	60943	
D531	105mm Howitzer Ammunition Improvement	4861	0	0	0	0	0	0	0	18191	
D613	Mortar Systems	5000	9692	11200	0	0	0	0	0	26200	
D695	XM982 Projectile	0	635	5901	10729	16169	16753	0	0	50187	
D705	Hydra 70 Engineering and Manufacturing Development	0	0	4000	0	0	0	0	0	4000	
D712	Non-Lethal Programs	2731	0	0	0	0	0	0	0	2731	
DAS1	Small Arms Improvement	1525	1453	0	2459	3092	3235	6772	Continuing	Continuing	

Mission Description and Budget Item Justification: Provides for engineering development of weapons and munitions systems. The Multi-Purpose Individual Munition (MPIM) provides the infantry with a fire-and-forget weapon capable of defeating enemy forces in buildings, bunkers and lightly armored vehicles. The howitzer ammunition effort supports development of ammunition for the M119A1 Howitzer. The mortar systems effort supports qualification of an Improved Mortar Ballistic Computer (IMBC) and type classification of training and illumination cartridges for the 120mm mortar. The XM982 extended range Dual Purpose Improved Conventional Munition (DPICM) is an extended range 155mm artillery projectile. It will extend the range of the M198, M190A5, M190A6, 155mm Paladin and the lightweight Howitzer to approximately 37 kilometers, with the Modular Artillery Charge System (MACS) in Crusader extending the range to 47 kilometers. The Hydra 70 EMD program will accomplish airworthiness testing of the Hydra 70 rocket motor under various flight conditions. The non-lethal program provides for force response options for non-lethal immobilization of personnel and materiel through development of non-lethal capabilities for multiple weapon systems/platforms. The small arms improvement program develops technology to enhance lethality, target acquisition, fire control, training effectiveness and /or reliability for small arms weapon systems. This project develops a universal mounting bracket for the MK19-3 Grenade Machine Gun.

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Exhibit R-2 (PE 0604802A)

Mission Description and Budget Item Justification: Provides for engineering development of weapons and munitions systems. The Multi-Purpose Individual Munition (MPIM) provides the infantry with a fire-and-forget weapon capable of defeating enemy forces in buildings, bunkers and lightly armored vehicles. The howitzer ammunition effort supports development of ammunition for the M119A1 Howitzer. The mortar systems effort supports qualification of an Improved Mortar Ballistic Computer (IMBC) and type classification of training and illumination cartridges for the 120mm mortar. The XM982 extended range Dual Purpose Improved Conventional Munition (DPICM) is an extended range 155mm artillery projectile. It will extend the range of the M198, M190A5, M190A6, 155mm Paladin and the lightweight Howitzer to approximately 37 kilometers, with the Modular Artillery Charge System (MACS) in Crusader extending the range to 47 kilometers. The Hydra 70 EMD program will accomplish airworthiness testing of the Hydra 70 rocket motor under various flight conditions. The non-lethal program provides for force response options for non-lethal immobilization of personnel and materiel through development of non-lethal capabilities for multiple weapon systems/platforms. The small arms improvement program develops technology to enhance lethality, target acquisition, fire control, training effectiveness and /or reliability for small arms weapon systems. This project develops a universal mounting bracket for the MK19-3 Grenade Machine Gun.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development	
<p>Projects within this program element support research efforts in the engineering and manufacturing development phase of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.</p>		
Page 2 of 29 Pages		Exhibit R-2 (PE 0604802A)

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development								D284	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D284	Multipurpose Individual Munition	7450	2831	16624	16150	9716	0	0	0	60943	

A. Mission Description and Justification: Provides for the engineering manufacturing development (EMD) of a lightweight, shoulder fired, multiple purpose weapon. Provides the infantry with a fire and forget weapon capable of defeating enemy forces in buildings, bunkers, and lightly armored vehicles. The Multi-Purpose Individual Munition/Short Range Anti-Tank Weapon (MPIM/SRAW) is capable of being fired quickly from its carrying configuration and can be safely fired from an enclosure for the close battle. It is more versatile than the AT4 system because it can be fired from enclosures and defeat bunkers and various field fortifications. This system will have tremendously increased lethality over the AT4 and will be multiple target capable. System design will allow for growth, service life extension and technology insertion to support the U. S. Army mission of crisis response to regionally based threats. The Army and U. S. Marine Corps have signed a memorandum of agreement for a horizontal technology integration effort utilizing the USMC SRAW flight module/launcher as the carrier for the MPIM warhead.

Acquisition Strategy: The MPIM/SRAW is a 65-month two phase EMD program which will leverage off the USMC 42-month SRAW EMD contract awarded in June 1994 and the 18-month U. S. Army technology demonstration MPIM/SRAW contract awarded in January 1995. The MPIM/SRAW EMD Phase 1 contract (18 month risk mitigation effort) was awarded in October 1996 with an EMD Phase 2 (maturation) contract (option) award in April 1998. Funding for initial production facilitization (IPF) and long lead items (LLI) procurement begins in FY 01 to facilitate maintaining an FY 02 First Unit Equipped (FUE). Low rate initial production (LRIP) will begin in FY 02. Full rate production begins in FY 04.

FY 1997 Accomplishments:

- 1841 Continued Phase 1 EMD effort
- 750 Completed warhead module design improvements
- 700 Completed simulation VV&A
- 1750 Conducted Phase 1 EMD flight tests and analysis
- 701 Initiated procurement of missile hardware for pre-production test (PPT) flight tests
- 850 Initiated integrated logistics support (ILS), quality and environmental programs to support EMD
- 858 Finalized system level specification for preliminary design review (PDR)
- Total 7450

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

D284

Development

FY 1998 Planned Program:

- 1054 Conduct system level analysis
- 700 Initiate procurement of range support hardware for PPT flights
- 606 Support PDR
- 400 Prepare and conduct early user demonstration (EUD)
- 71 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 2831

FY 1999 Planned Program:

- 2806 Continue Phase 2 EMD effort
- 1722 Complete procurement of missile hardware for PPT flight tests
- 2000 Conduct PPT flight tests
- 320 Complete procurement of range support hardware for PPT flight tests
- 2000 Conduct grenade safe and arm (S&A) trade studies, analysis and tests
- 1370 Design and fabricate missiles for electromagnetic environmental effects (E3) analyses and tests
- 905 Continue ILS, quality and environmental programs to support EMD
- 870 Prepare for critical design review (CDR)
- 4311 Initiate procurement of missile hardware for pre-production qualification testing (PPQT)
- 320 Conduct lethality analysis
- Total 16624

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	13813	2922	18964
Appropriated Value	14108	2922	
Adjustments to Appropriated Value	-6658	-91	
FY 1999 President's Budget	7450	2831	16624

Project D284

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

PROJECT

D284

Change Summary Explanation:

Funding: FY 97- Due to restructuring of MPIM EMD into a two-phase effort, funds became available for reprogramming to higher priority requirements (-6658)

FY 99-Congressional adjustments (-1300); realigned (-1000) to higher priority requirements.

Schedule: The Army has restructured the MPIM/SRAW program to an incremental EMD, an 18 month risk mitigation (Phase 1) prior to award of the 47-month EMD phase (Phase 2) option.

C. Other Program Funding Summary

PE 0603313A, Project D387

Missile Procurement, Army, SSN C09100 (Multi-Purpose Individual Munition)

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To Comp</u>	<u>Total Cost</u>
609	0	0	0	0	0	0	0	5516
0	0	0	0	5797	30664	26584		

D. Schedule Profile

1

Complete telemetry missile flight tests

Corporate/government Phase 1 reviews

Exercise EMD Phase 2 option

Complete EUD tests

Conduct PDR

Complete PPT

FY 1997		FY 1998			FY 1999		
		1	2	3	4	1	2
2	3						
X*	X*		X				
		4					
		X*	X				
				X			
					X		
					X		

***Denotes completed effort**

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY										PE NUMBER AND TITLE	
5 - Engineering and Manufacturing Development										0604802A Weapons and Munitions - Engineering Development	D284
A. Project Cost Breakdown											
Primary hardware development											
Program management support											
Developmental Test and Evaluation											
SBIR/STTR											
Total											
B. Budget Acquisition History and Planning Information											
Performing Organizations											
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
Product Development Organizations											
Lockheed -Martin Aeronautics (EMD phase 1)	SS/CPIF	Oct 96	7000	7000	4858	2142	0	0	0	7000	
Lockheed-Martin (EMD phase 2)	SS/Cost sharing	Various*	43100	43100	0	3774	2626	14300	20400	41100	
Support and Management Organizations											
PM MPIM, RSA	PO				1143	505	134	720	1850	4352	
AMCOM, RSA	PO				1483	481	0	540	1416	3920	
Misc.	PO				358	246	0			604	
SBIR/STTR							71			71	
Test and Evaluation Organizations											
TECOM: APG	PO				330	302	0	1064	2200	3896	
Note: April 98 contract to be awarded using FY 1997 funds. * Initial award in Oct 96; options through FY 01											

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DATE February 1998

BUDGET ACTIVITY

BUDGET ACTIVITY

PE NUMBER AND TITLE

0604802A Weapons and Munitions - Engineering Development

**PROJECT
D284**

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	4858	5916	2626	14300	20400	48100
Subtotal Support and Management	2984	1232	205	1260	3266	8947
Subtotal Test and Evaluation	330	302		1064	2200	3896
Total Project	8172	7450	2831	16624	25866	60943

Project D284

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DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

D531

Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D531 105mm Howitzer Ammunition Improvement	4861	0	0	0	0	0	0	0	18191

A. Mission Description and Justification: This project provides for the fielding of an extended range 105mm artillery projectile for the M119A1 Howitzer and development of self-destruct fuzing technology for munitions.

Acquisition Strategy: Initial low rate production of cartridge, artillery, 105mm Dual Purpose Improved Conventional Munition (DPICM), XM915, begins in FY 1998 and will be sole sourced to the developer under fixed price contracts.

FY 1997 Accomplishments:

- 1332 Load, assembly and pack (LAP) of cartridge for development test and evaluation accomplished
- 1459 Conducted DT&E tests
- 2070 Test and evaluation management, engineering evaluation of performance
- Total 4861

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	5067	0	0
Appropriated Value	5176		
Adjustments to Appropriated Value	-315	0	
FY 1999 President's Budget	4861	0	0

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Procurement, Ammunition, Army; Cartridge, Artillery, 105mm DPICM, SSN E53500	13475	9775	0	0	0	0	0	0	23250

.Project D531

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

PROJECT

D531

D. Schedule Profile

Completed EMD testing

Eng eval of perf; follow up on all testing

Type Classification

*Denotes a completed milestone

1

FY 1997
2 3
X*

14

FY 1998
2. 3

FY 1999
2 3

4

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PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering Development

D531

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Program engineering and management support	3402	0	0
Contract engineering support	0	0	0
Test and evaluation support	1459	0	0
Total	4861	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--	---	--------------------------	-------------------------	--------------------	------------------------	---------	---------	---------	--------------------	---------------

Product Development Organizations

TACOM:ARDEC	ALLOT	Oct 92	5527	5527	4829	2070	0	0	0	6899
Chamberlain:	OPEN/CPIF	Sep 93	1100	1100	1244	0	0	0	0	1244
SAAP, Scranton										
Annom Corp.	OPEN/CPIF	Sep 93	590	590	858	0	0	0	0	858
KDI	OPEN/CPIF	Sep 93	3914	3914	4022	0	0	0	0	4022
Olin	OPEN/FP	Sep 93	117	117	117	0	0	0	0	117
Norris Industries	OPEN/CPIF	Sep 93	371	371	371	0	0	0	0	371
Dayron Corp.	OPEN/CPIF	Sep 94	238	238	238	0	0	0	0	238
LSAAP	FP/ALLOT	Jul 94	1792	1792	988	1332	0	0	0	2320

Support and Management Organizations: None

Test and Evaluation Organizations

TECOM-YPG, AZ			3193	3193	663	1291	0	0	0	1954
WSMR; CRTA;			168	168	0	168	0	0	0	168
ARL										

Project D531

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5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development		D531	
		Total		Budget to	Total
		Prior to		Complete	Program
		FY 1997	FY 1997	FY 1998	FY 1999
		12667	3402		16069
		663	1459		2122
		13330	4861		18191
Subtotal Product Development					
Subtotal Support and Management					
Subtotal Test and Evaluation					
Total Project					

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development								D613	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D613	Mortar Systems	5000	9692	11200	0	0	0	0	0	26200	
<p>A. Mission Description and Justification: This program provides funds to develop existing and emerging technology to enhance the effectiveness, lethality, versatility of use, mobility, and accuracy of mortar systems. Current mortar systems include conventional ammunition with a variety of fuzing and applications, weapons that range from man-portable 60mm to vehicle-mounted 120mm mortars, and related equipment such as fire control, mortar ballistic computer, training devices, and ammunition. Current funding for this project completes development of the digital Mortar Fire Control System (MFCS), which exponentially reduces response time while improving accuracy. This significantly improves the survivability of the mortar crew and reduces the possibility of fratricide and collateral damage. MFCS will be compatible with the Advanced Field Artillery Tactical Data System (AFATDS) and fully integrate mortars into the fire support network. It will also be compatible with the Future Battle Command, Brigade and Below (FBCB2) situation awareness software.</p> <p>Acquisition Strategy: The Mortar Fire Control System was approved as a two year Warfighting Rapid Acquisition Program (WRAP) effort. FY 1997 funds were realigned to this program from PE 0203758A (Horizontal Battlefield Digitization) in FY 1997. FY 1998 WRAP funding was aligned to this PE in the FY 1998 DoD Appropriations Bill, at the Army's request. Development will be accomplished by a primary contractor (Allied-Signal Corp. of Teterboro, NJ) teamed with a number of subcontractors. Initial production, scheduled for FY 2000, is planned as an option to the development contract.</p>											
<p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 200 Developed performance specifications • 950 Prepared request for proposal, conducted Best Value source selection • 3850 Awarded initial contract increment Total 5000 											
<p>FY 1998 Planned Program</p> <ul style="list-style-type: none"> • 7560 Contractor software development and hardware integration • 240 Conduct user assessment • 1649 Support and Management • 243 Small Business Innovative Research/Small Business Technology Transfer Programs Total 9692 											

.Project D613

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
D613

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering
Development

FY 1999 Planned Program

- 6861 Continue software/hardware integration, test and provide units for contractor logistical support (CLS)
- 1839 Support and management
- 1000 Conduct production qualification test
- 1000 Conduct operational test
- 500 Type classify
- Total 11200

B. Project Change Summary

FY 1998/99 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
0	0	0
0	10000	
5000	-308	
5000	9692	11200

Change Summary Explanation:

Funding - FY 1997/1998: The Mortar Fire Control System (MFCS) was approved as a Warfighting Rapid Acquisition Program (WRAP). FY 1997 funds were reprogrammed to this project for this effort. FY 1998 funds were provided in the DoD FY 1998 Appropriations Bill. FY 1999 funds were provided to continue EMD of the high priority Mortar Fire Control System program.

Schedule: The WRAP reprogramming moves the development and subsequent fielding of this system up by two years.

C. Other Program Funding Summary

Procurement, Ammunition, Army:

SSN E25504, M929

SSN E25507, XM931

SSN E25503, XM930

SSN E25501, M934

Other Procurement, Army: K99200 (IMBC)

Other Procurement, Army: K99300 (MFCS)

RDTE: 23761/D394 Force XXI WRAP

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To</u>	<u>Total</u>
34936	0	0	25439	25947	26607	23653	<u>Compl</u>	<u>Cost</u>
50907	31704	39703	39938	39398	40195	39526	0	
25953	2933	0	0	0	0	0	0	
0	38036	29087	22163	0	0	0	0	
6775	0	0	2910	0	0	0	0	
0	0	0	10637	12763	36554	36561	120400	220821
0	37700	99528	99421	99345	99244	99362	0	

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BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT	
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development				February 1998		D613	
<u>D. Schedule Profile</u>		FY 1997		FY 1998		FY 1999			
Milestone II		1	2	3	4	1	2	3	4
Contract award					X				
Development					X				X
User assessment									
Production Qualification Test						X			
Operational Test								X	
Milestone III (TC standard)									X

Project D613

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RD T&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604802A Weapons and Munitions - Engineering Development

**PROJECT
D613**

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
<u>A. Project Cost Breakdown</u>			
Product development	4050	7560	6861
Management /engineering support	750	1649	1839
Test and evaluation	200	240	2500
SBIR/STTR		243	0
Total	5000	9692	11200

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Allied Signal Corp, Teterboro, NJ	Competitive Cost Plus Award fee	4Q97	16980	16980	0	3779	6350	6381	0	16510
TACOM-ARDEC			1360	1360	0	400	480	480	0	1360
PM Applique			405	405	0	5	400	0	0	405
PM AFATDS			330	330	0	0	330	0	0	330
Support and Management Organizations										
TACOM-ARDEC			2479	2479	0	340	840	1299	0	2479
TACOM-ACALA			407	407	0	62	155	190	0	407
PM Mortars			887	887	0	173	364	350	0	887
Support Contract			178	178	0	78	100	0	0	178
OGA			299	299	0	109	190	0	0	299
SBIR/STTR							243		0	243
Test and Evaluation Organizations										
TECOM			1138	1138	0	8	130	1000	0	1138
TEXCOM			1056	1056	0	6	50	1000	0	1056
OPTEC			600	600	0	40	60	500	0	600

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DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

D613

Development

Government Furnished Property: Not applicable

	Total					
	Prior to				Budget to	Total
	<u>FY 1997</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development		4184	7560	6861		18605
Subtotal Support and Management		762	1892	1839		4493
Subtotal Test and Evaluation		54	240	2500		2794
Total Project		5000	9692	11200		25892

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BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development								D695	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D695 XM982 Projectile		0	635	5901	10729	16169	16753	0	0	50187	
<p>A. Mission Description and Justification: The XM982 is an extended range Dual Purpose Improved Conventional Munition (DPICM) projectile which is an extended range 155mm artillery projectile. It will be compatible with all current and future 155mm artillery systems in the U. S. inventory. The XM982 will extend the range of the M198, M109A5, 155mm Paladin (M109A6), and the lightweight Howitzer to approximately 37 kilometers. The XM982 with the Modular Artillery Charge System (MACS) extends the Crusader range to 47 kilometers. Allowing greater stand-off from threats and faster defeat of potential threats increases survivability.</p> <p>Acquisition Strategy: Engineering and manufacturing development (EMD) will consist of a system contract to design, test and manufacture hardware and then produce development test hardware for government test and evaluation. Development testing, consisting of safety tests and firing table tests, will be accomplished by TECOM at TECOM Proving Grounds during EMD. The EMD contractor will perform production. The EMD contract will include unpriced options.</p> <p>FY 1997 Accomplishments: Project not funded in FY 1997 under this project. However, congressional support for the XM982 Extended Range Artillery Projectile program was provided in PE 0603004A/D43A.</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 509 Government support for engineering: Integrated Product Team (IPT), contract solicitation, engineering support for development testing. • 110 Program management: technical evaluation; program execution • 16 Small Business Innovative Research/Small Business Technology Transfer Programs Total 635 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1390 Government support for engineering: Integrated Product Team (IPT), contract solicitation, engineering support for development testing. • 4081 Contracts for propellants, fuzing and metal parts • 110 Program management • 320 Test and evaluation Total 5901 											

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February 1998

PE NUMBER AND TITLE

0604802A Weapons and Munitions - Engineering

D695

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
B. <u>Project Change Summary</u>			
FY 1998/99 President's Budget	0	655	5901
Appropriated Value	0	655	
Adjustments to Appropriated Value	0	-20	
FY 1999 President's Budget	0	635	5901

Change Summary Explanation: Funding: FY 1998: The XM982 projectile transitions from the technology base into EMD in FY 1998.

C. Other Program Funding Summary

RRDT&E: 0603004A, Project D43A

Procurement Ammunition, Army: E80100

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To</u>	<u>Total</u>
5000						24979	124100	149079

D. Schedule Profile

Milestone II

Award initial EMD contract

Milestone III: 4Q FY 2002

***Denotes completed milestone**

[illegible]

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BUDGET ACTIVITY

PROJECT

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604802A Weapons and Munitions - Engineering

Development

<u>A. Project Cost Breakdown</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Contractor Engineering Support	0	0	4081
Government Engineering Support	0	438	889
Program Management Support	0	181	181
Developmental Test and Evaluation	0	0	750
SBIR/STTR		16	
Total	0	635	5901

B. Budget Acquisition History and Planning Information

Performing Organizations											
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
Product Development Organizations											
TBD	C/CPIF	2Q98	TBD	TBD	0	0	0	4081	24273	28354	
Support and Management Organizations											
ARDEC-Picatinny							438	889	6928	8255	
PM SADARM			0		0	0	181	181	840	1202	
SBIR/STTR							16			16	
Test and Evaluation Organizations											
TECOM					0	0	0	750	11610	12360	
Government Furnished Property: None											
Subtotal Product Development											28354
Subtotal Support and Management											9473
Subtotal Test and Evaluation											12360
Total Project											50187

Government Furnished Property: None

Subtotal Product Development
Subtotal Support and Management
Subtotal Test and Evaluation
Total Project

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

D705

Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D705 Hydra 70 Engineering and Manufacturing Development	0	0	4000	0	0	0	0	0	4000

A. Mission Description and Justification: This project will accomplish air qualification testing of the Hydra 70 rocket motor from the Apache Attack Helicopter under various flight conditions. The objective of the tests will be to determine the safety and compatibility of the rocket motor with the firing platform under various tactical conditions. A subject of major interest will be the effect of rocket exhaust gasses on helicopter engines and compatibility with current fire control system.

Acquisition Strategy: The Hydra 70 project manager will manage funding and scheduling of the tasks to prove airworthiness of the composite propellant rocket motors. Technical support will be provided by AVRDEC/MRDEC. Firings will be conducted by TECOM at Yuma Proving Ground, Arizona.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 2000 Purchase 500 rocket motors and test the warheads
- 600 Rental of AH64 Helicopter from Fort Rucker
- 600 Range costs at Yuma Proving Ground
- 800 Government engineering support (AVRDEC/MRDEC/IOC/NSWC/ARDEC)
- Total 4000

B. Project Change Summary

FY 1998/99 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

	FY 1997	FY 1998	FY 1999
	0	0	0
	0	0	0
	0	0	0
	0	0	4000

Change Summary Explanation:

Funding: FY 1999-Funds reprogrammed into this project to complete the congressional special interest effort which was included in PE 0603313A in FY 1997.

Project D705

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BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development								D705	
C. Other Program Funding Summary											
RDT&E: PE 63313A/703-Hydra 70 Rocket PIP		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total	
		3500	0	0	0	0	0	0	0	Cost	3500
D. Schedule Profile											
1 Rocket acquisition		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003			
		2	3	4	1	2	3	4			
Engineering support						X					
Platform rental						X					
Testing							X				

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
0604802A Weapons and Munitions - Engineering
D705

5 - Engineering and Manufacturing Development

Development

	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown			
Government Engineering Support	0	0	800
Program Management Support	0	0	2500
Developmental Test and Evaluation	0	0	100
Government Equipment rental	0	0	600
Total	0	0	4000

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
MRDEC	MIPR	3Q99	2800	2800	0	0	0	2800	0	2800
Support and Management Organizations										
AVRDEC, IOC/PM	MIPR	3Q99	600	600	0	0	0	600	0	600
Test and Evaluation Organizations										
TECOM	MIPR	3Q99	600	600	0	0	0	600	0	600

Government Furnished Property: Not applicable

Subtotal Product Development	2800	2800
Subtotal Support and Management	600	600
Subtotal Test and Evaluation	600	600
Total Project	4000	4000

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development								D712	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D712 Non-Lethal Programs		2731	0	0	0	0	0	0	0	2731	
<p>A. Mission Description and Justification: This program will demonstrate the application of non-lethal technologies, devices and munitions that are explicitly designed and employed to incapacitate personnel and/or materiel while minimizing fatalities and undesired damage to property and the environment. Non-lethal devices have the potential to provide the foundation for regional and peacekeeping operations to be successful, and may allow military forces to respond to such conflicts through the use of an established Graduated Response Matrix. The application of non-lethal capabilities that minimizes collateral damage while providing for safe employment and mission accomplishment will enhance operational effectiveness.</p> <p>Acquisition Strategy: Upon completion of user demonstration and feedback, selected non-lethal devices/munitions will be integrated into the appropriate acquisition phase depending on their design maturity and ability to fulfill the user's needs.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 1785 Acoustics: Initiated integration of initial health hazard assessment into acoustic source design configuration and propagation measurement, for demonstration tests and potential weapon /platform applications • 590 Kinetics: Performed initial validation test of health hazard (target) assessment model (HHTAM) for blunt impact munitions. Developed functional purchase description for urgent release items. Conducted safety test and evaluation of kinetic systems in support of dismounted battlespace battle lab's warfighting experiments • 259 Entanglements: Conducted safety and performance testing of gun-fired 40mm ballistically deployed entanglement munition with integrated fuze • 97 Vehicle stopper: Completed commercial off-the-shelf (COTS) electric discharge vehicle stopper performance evaluation <p>Total 2731</p> <p>FY 1998 Planned Program: Project not funded in FY 1998</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p>											

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DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

D712

Development

B. Project Change Summary

FY 1998/99 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997

3215

3284

-553

2731

FY 1998

0

FY 1999

0

Change summary explanation: Funding - FY 1997- Reduction due to funds reprogrammed to higher priority requirements (-553)

C. Other Program Funding Summary: Not applicable.D. Schedule Profile

FY 1997

1

2

3

4

1

2

3

4

1

2

3

4

Demonstrate a 40mm weapon-launched
ballistic entanglement munitionDemonstrate a 40mm weapon launched
ballistic "sticky net" munitionDemonstrate a COTS electric discharge
electric vehicle stopperFabricate & test next generation of
acoustic sources

*Denotes completed milestone

Project D712

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY					
5 - Engineering and Manufacturing Development					D712
PE NUMBER AND TITLE					
0604802A Weapons and Munitions - Engineering Development					
A. Project Cost Breakdown					
Product development	FY 1997	FY 1998	FY 1999		
	2731	0	0		
Management and engineering support	0	0	0		
Test and evaluation	0	0	0		
Total	2731	0	0		
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or	Method/Type	Award or	Performing	Project	Total
Government	or Funding	Obligation	Activity	Office	Prior to
Activity	Vehicle	Date	EAC	EAC	FY 1997
Product Development Organizations					
ARDEC: NJ	CPEF	2Q/3Q97	2311	2311	0
ARL: MD	NA	2Q97	420	420	0
Support and Management Organizations: None					
Test and Evaluation Organizations: None					
Government Furnished Property: Not applicable					
Subtotal Product Development			2731	0	2731
Subtotal Support and Management				0	0
Subtotal Test and Evaluation				0	0
Total Project			2731	0	2731

Project D712

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

DAS1

Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DAS1 Small Arms Improvement	1525	1453	0	2459	3092	3235	6772	Continuing	Continuing

A. Mission Description and Justification: This program provides funds to develop existing and emerging technology to enhance lethality, target acquisition, fire control, training effectiveness, and reliability for small arms weapon systems. Current small arms include a variety of personal defense weapons (.38 caliber, .45 caliber; 9mm), individual weapons (5.56mm), crew-served weapons (5.56mm-40mm) and related equipment such as fire control, training devices and ammunition. Current efforts focus on improvements to the MK19-3 Grenade Machine Gun (GMG) and M2 Heavy Barrel Machine Gun. Improvements to the M2 Heavy Barrel, Caliber .50 Machine Gun include a trigger safety and a Quick-Change Barrel (QCB) kit to increase safety while simplifying and accelerating M2 barrel changes. Improvements to the MK19-3 GMG include an investigation of two mount designs. Both mounts eliminate excessive looseness and allow bold and accurate fire. One design permits remote control firing. Both mounts will accept either the MK19 or the caliber .50 M2 Heavy Barrel. The Small Arms Fire Control System (SAFCS) provides a full solution fire control for the MK19. The Low Cost Training Ammunition (LCTA) provides visibility out to 1500 M while reducing the cost of current ammunition training.

Acquisition Strategy: The universal mounting bracket will enter production as an engineering change to the current MK19-3 Grenade Machine Gun technical data package. Currently fielded systems will be modified through an MK19-3 modification effort. SAFCS strategy will lead to a type classification (Generic) and procurement of test hardware. Several non-developmental item (NDI) solutions exist for the caliber .50 QCB. QCB strategy is NDI, evaluation of competitive bid samples and contract award for DT/OT hardware. Both new mounts will be direct replacements for the MK19. Since 100% replacement is not practical, a Basis of Issue (BOI) will be developed. The LCTA strategy includes a market survey and procurement and testing a limited sample of potential products for verification of the product's performance specification.

FY 1997 Accomplishments:

- 116 Solicited competitive hardware
- 588 Conducted technical evaluation
- 287 Awarded hardware contract
- 181 Fabricated test hardware
- 222 Performed technical and limited user test
- 43 Prepared test reports and assessments
- 88 Type classification of generic SAFCS

Total 1525

.Project DAS1

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998	DAS1																				
5 - Engineering and Manufacturing Development		0604802A Weapons and Munitions - Engineering Development																					
<p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 400 In-house design and fabrication of a Mount for the MK-19-3 Grenade Machine Gun • 200 Procure a modified non-developmental item (NDI) Mount for the MK-19-3 GMG • 287 Conduct initial tests • 20 Determine capabilities • 50 Finalize specifications • 10 Market survey • 120 Small purchases • 75 Manufacturing delivery • 100 Testing • 75 Evaluation/Test report • 80 Performance specifications validation • 36 Small Business Innovative Research/Small Business Technology Transfer Programs Total 1453 <p>FY 1999 Planned Program: Project not funded in FY 1999</p> <p>B. Project Change Summary</p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/99 President's Budget</td> <td>1566</td> <td>0</td> <td>0</td> </tr> <tr> <td>Appropriated Value</td> <td>1566</td> <td>1500</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-41</td> <td>-47</td> <td>0</td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>1525</td> <td>1453</td> <td>0</td> </tr> </tbody> </table> <p>Summary Change Explanation: Funding—FY 1998 program is a congressional increase (+1500) and decrease (-47) for undistributed congressional reductions.</p> <p>C. Other Program Funding Summary: Not applicable.</p>					FY 1997	FY 1998	FY 1999	FY 1998/99 President's Budget	1566	0	0	Appropriated Value	1566	1500		Adjustments to Appropriated Value	-41	-47	0	FY 1999 President's Budget	1525	1453	0
	FY 1997	FY 1998	FY 1999																				
FY 1998/99 President's Budget	1566	0	0																				
Appropriated Value	1566	1500																					
Adjustments to Appropriated Value	-41	-47	0																				
FY 1999 President's Budget	1525	1453	0																				
.Project DAS1		Page 27 of 29 Pages	Exhibit R-2 (PE 0604802A)																				

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604802A Weapons and Munitions - Engineering

DAS1

Development

D. Schedule Profile

D. Schedule Profile												
	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Draft performance specs (brackets)		X*										
Perform validation tests (brackets)				X*								
Finalize performance specs (brackets)				X*								
Solicit competitive hardware (QCB)					X*							
Conduct technical evaluation (QCB)							X					
Award hardware contract (QCB)								X				
Fabricate test hardware (SAFCS)						X						
Perform technical & limited user test							X					
Test reports & assessments (SAFCS)								X				
Type classify generic (SAFCS)								X				
Fabricate hardware (Mount)						X						
Test prototype (Mount)							X					
Finalize Specifications (Mount)								X				
Market survey & small purchases (Ammo)						X						
Manufacturing delivery (Ammo)												
Testing (Ammo)									X			
Evaluation/Test report (Ammo)										X		
Performance specs validation (Ammo)												X

* Milestone completed

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development	0604802A Weapons and Munitions - Engineering Development			February 1998	DAS1
<u>A. Project Cost Breakdown</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>		
Other government support	1351	1360	0		
Program management support	174	57	0		
SBIR/STTR		36			
Total	1525	1453	0		
<u>A. Budget Acquisition History and Planning Information</u>					
<u>Performing Organizations</u>					
Contractor or	Project	Total			
Government	Office	Prior to			
Performing	EAC	FY 1997			
Activity					
Method/Type					
Award or					
Obligation					
Date					
Vehicle					
Product Development Organizations					
ARDEC	654	0	654	865	0
MIPR					
Support and Management Organizations					
PM, Small Arms	174	0	174	57	0
Allotment					
Multiple					
ACALA	50	0	50	10	0
MIPR					
Multiple					
SBIR/STTR				36	36
Test and Evaluation Organizations					
Aberdeen Test	400	0	400	215	0
MIPR					
Center					
TEXCOM	175	0	175	0	0
MIPR					
FFP	72	0	72	270	0
Multiple					
1Q98					
Government Furnished Property: None					
Subtotal Product Development			654	865	1519
Subtotal Support and Management			224	103	327
Subtotal Test and Evaluation			647	485	1132
Total Project			1525	1453	2978

Project DAS1

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DATE
February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	19061	27174	26002	23942	18534	21653	33164	Continuing	Continuing
DH01 Combat Engineer Equipment Engineering Development	8834	8302	7575	2860	1533	2137	12351	Continuing	Continuing
DH02 Bridge Site Mobility	0	0	350	2000	2800	1500	250	0	6200
DH14 Logistics Support Equipment Engineering Development	84	4680	93	96	92	92	87	Continuing	Continuing
DL39 General Support Equipment Engineering Development	1599	2215	2511	2177	2126	4683	4241	Continuing	Continuing
DL41 Fuels and Equipment Engineering Development	941	1038	1086	1069	1068	1332	1346	Continuing	Continuing
DL42 Camouflage System Engineering Development	889	869	781	370	358	306	313	Continuing	Continuing
DL43 Combat Service Support Equipment Engineering Development	0	0	190	63	630	297	1159	Continuing	Continuing
DL44 Distribution System, 105kW	0	0	0	0	0	714	0	0	805
D194 Engine Driven Generators Engineering Development	2279	7302	9059	8273	5375	2171	2579	Continuing	Continuing
D279 Airdrop Equipment Engineering Development	1326	1317	1361	1395	1393	4961	5738	Continuing	Continuing
D429 Rigidwall Shelter Engineering Development	3109	1451	911	1172	1645	2200	2219	Continuing	Continuing
D461 Marine Oriented Logistics Equipment Engineering Development	0	0	2085	4467	1514	1260	2881	Continuing	Continuing

Mission Description and Budget Item Justification: This Program Element (PE) supports engineering and manufacturing development (EMD) of new and advanced combat support and combat service support equipment and therefore belongs in Budget Activity 5.

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DH01

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DH01 Combat Engineer Equipment Engineering Development	8834	8302	7575	2860	1533	2137	12351	Continuing	Continuing

A. Mission Description and Budget Item: This project supports the development and transition to procurement of military tactical bridging for wet and dry gap bridging requirements such as the Common Bridge Transporter (CBT), the Improved Ribbon Bridge (IRB) Bays, Heavy Dry Support Bridge (HDSB), and Line of Communication Bridge (LOCB). All bridging work is in support of the increased military load class (MLC) requirements for the Abrams tank. This project also provides for market investigations of engineer construction equipment.

Acquisition Strategy: CBT - Competitive RDTE followed by procurement. HDSB - Competitive RDTE followed by competitive procurement. IRB - Limited RDTE followed by competitive procurement.

FY 1997 Accomplishments:

- 7706 Fabricated HDSB EMD Bridge Prototype
- 258 Tested IRB Ramp Prototype
- 195 Modified CBT Interfaces with HDSB & IRB
- 250 Completed IRB Embankment Height & Vehicle Interface Study
- 338 Simulated CBT Vehicle Performance with HDSB & IRB Loads
- 87 Conducted Market Investigations for Construction Equipment
- Total 8834

FY 1998 Planned Program:

- 6006 Fabricate HDSB EMD Launcher Prototype
- 541 Prepare for contractor testing
- 655 Contractor testing of HDSB Prototype
- 294 Test IRB Positive Flotation
- 237 IRB Market Investigation
- 361 Conduct market investigations for Construction Equipment
- 208 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 8302

Project DH01

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

**0604804A Logistics & Engineer Equipment -
Engineering Development**

PROJECT DH01

FY 1999 Planned Program:

- | | | |
|-------|------|---|
| • | 2096 | Prepare and Fabricate HDSB EMD System Support Package |
| • | 923 | Complete contractor testing of HDSB EMD Prototype |
| • | 3216 | Initiate Pre-production Qualification Test (PPQT) of HDSB |
| • | 430 | Prepare IRB Production Solicitation |
| • | 400 | Complete IRB Positive Flotation Test |
| • | 510 | Conduct market investigation for Construction Equipment |
| Total | 7575 | |

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustment to Appropriated Value
FY 1999 President's Budget

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
9433	8566	7615
9203	8566	
-369	-264	
8834	8302	7575

C. Other Program Funding Summary

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Compl</u>	<u>Cost</u>
OPA3, G82400, Heavy Dry Support Bridge				14041	20544	21129	21261	Cont	Cont
OPA3, M26800, Bridge, Float-Ribbon, Transporter	4446	4102	8824	7968	9092	16424	21588	Cont	Cont
OPA3, M26600, Bridge, Float-Ribbon, Interior Bays				3049	3604	8008	6896	Cont	Cont
OPA3, M26700, Bridge, Float-Ribbon, Ramp Bays				1306	2050	2288	2941	Cont	Cont

Project DH01

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DH01

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Fabricated HDSB Prototype Bridge	X*											
Conducted IRB Prototype Test		X*										
Fabricated HDSB Prototype Launcher							X					
Conducted IRB Market Investigation						X						
IRB Positive Floatation Test						X						
HDSB Contractor Acceptance Test									X			
IRB LRIP Milestone										X		
Conduct HDSB PPQT										X		
Conducted Construction Equipment												X
Market Investigation				X*					X			

* Denotes Milestone completed or Activity started.

Project DH01

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development				
A. Project Cost Breakdown						
DH01 CONSTRUCTION EQUIPMENT				FY 1997	FY 1998	FY 1999
Construction Equip Market Investigations				87	361	510
DH01 BRIDGING (HDSB, CBT & IRB)						
Primary Hardware Development				6000	4382	2006
Developmental Test and Evaluation				791	1490	3616
Program Management Support				449	442	349
Miscellaneous				1507	1627	1094
Total				8834	8302	7575
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or	Contract					
Government	Method/Type	Award or	Performing	Total		
Performing	or Funding	Obligation	Activity	Prior to		
Activity	Vehicle	Date	EAC	FY 1997	FY 1998	FY 1999
Product Development Organizations						
Williams Fairey	C-CPFF	Aug 96	9972	3500	1961	885
Engineering LTD						
Karliskronavarvet	C-CPFF	Aug 96	10445	3500	2184	1121
TARDEC	1095	Various		2519	619	510
Support and Management Organizations						
SAIC	C-CPFF	Various				
TACOM Logistics	1095	Various				
TACOM	1095	Various				
Engineering						
TACOM Quality	1095	Various				
TACOM Systems	1095	Various				
Acquisition						
Test and Evaluation Organizations						
TECOM	1095	Various		1508	485	3616
TARDEC	1095	Various		538	483	
Project DH01						
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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development				February 1998		DH01	
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete
Miscellaneous									Total Program
TACOM	1095	Various			2472				Cont
ANAD	1095	Various					250		Cont
WES	1095	Various					200		Cont
SBIR/STTR							208		Cont
Subtotal Product Development					9519	6087	4764	2516	Cont
Subtotal Support and Management						1951	1912	1443	Cont
Subtotal Test and Evaluation					1508	796	968	3616	Cont
Miscellaneous					2472		658		Cont
Total Project					13499	8834	8302	7575	Cont

Project DH01

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DH02

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DH02 Bridge Site Mobility	0	0	350	2000	2800	1500	250	0	6200

A. Mission Description and Budget Item Justification This project supports the development and transition to procurement of military tactical bridge site mobility equipment to meet requirements such as the Anchorage System for the Ribbon Bridge and Improved Ribbon Bridge (IRB), Access Egress Roadway System (AERS) for bridge approaches, and performance upgrades to the Bridge Erection Boat (BEB).

Acquisition Strategy: : Anchorage System - Competitive RDTE followed by procurement. AERS - competitive RDTE followed by procurement. BEB Upgrade - competitive RDTE followed by procurement.

FY 1997 Planned Program: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 100 Conduct Market Investigation for Anchorage Equipment
- 150 Conduct Market Investigation for Propulsion Equipment
- 100 Conduct Market Investigation for AERS
- Total 350

B. Project Change Summary

FY98/99 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

	FY 1997	FY 1998	FY 1999
	0	0	0
	0	0	0
	0	0	0
	0	0	350

Change Summary Explanation: FY 1999 (+350) - Restructured new start in anticipation of an accelerated development schedule.

Project DH02

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DH02

C. Other Program Funding Summary

OPA3, GA1200, Bridge Site Mobility
 OPA3, GA1300, Bridge Site Anchorage
 OPA3, M27200, Float Bridge Propulsion

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003-	To	Total
	0	0	0	0	0	0	383	Cont	Cont
	0	0	0	0	0	0	1914	Cont	Cont
	0	0	0	0	0	2002	4566	Cont	Cont

D. Schedule Profile

1 2 3

FY 1997 FY 1998

1 2 3 4

FY 1999

Compl

Cont

Cont

Cont

Milestone II AERS
 Milestone II Anchorage
 Milestone II BEB Upgrade

X
X
X

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998																								
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT																								
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development	DH02																								
<p>A. Project Cost Breakdown</p> <p>DH02 Bridge Site Mobility</p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>Primary Hardware Development</td> <td></td> <td></td> <td>94</td> </tr> <tr> <td>Developmental Test and Evaluation</td> <td></td> <td></td> <td>256</td> </tr> <tr> <td>Program Management Support</td> <td></td> <td></td> <td>350</td> </tr> <tr> <td>Miscellaneous</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>0</td> <td>0</td> <td></td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	Primary Hardware Development			94	Developmental Test and Evaluation			256	Program Management Support			350	Miscellaneous				Total	0	0	
	FY 1997	FY 1998	FY 1999																								
Primary Hardware Development			94																								
Developmental Test and Evaluation			256																								
Program Management Support			350																								
Miscellaneous																											
Total	0	0																									
<p>B. Budget Acquisition History and Planning Information - Not Applicable</p>																											

Project DH02

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DH14

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DH14 Logistics Support Equipment Engineering Development	84	4680	93	96	92	92	87	Continuing	Continuing

A. Mission Description and Justification: Develops and transitions to procurement a series of Material Handling Equipment (MHE) items.

Acquisition Strategy: Rough Terrain Container Handler (RTCH) - Competitive procurement of integrated NDI. Container Cargo Retriever (CCR) - Pre-Planned Product Improvement (P3I) to All Terrain Lifter Articulated System (ATLAS). MHE - Competitive procurements for miscellaneous MHE.

FY 1997 Accomplishments:

- 25 Conducted market investigations for the Container Cargo Retriever
- 25 Conducted market investigations for warehouse MHE
- 34 Conducted market investigations for other general MHE
- Total 84

FY 1998 Planned Program:

- 79 Conduct Market investigations for Light Weight Container Handling Equipment
- 260 Provide engineering support for development of performance specifications for Rough Terrain Container Handler (RTCH).
- 3000 Procure preproduction test hardware for RTCH.
- 1000 Provide test engineering support for RTCH.
- 223 Prepare purchase description; contract package of FY99 production contract for Rough Terrain Container Crane (RTCC).
- 118 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 4680

FY 1999 Planned Program:

- 30 Development of performance specifications for MHE.
- 30 Conduct market investigations for warehouse MHE.
- 33 Conduct market investigations for other general MHE.
- Total 93

Project DH14

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DH14

D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
Conducted Market Investigations for MHE				X*				X	
Award Prototype Contract for RTCH									
Conduct RTCH PQT									
Prepare/Conduct Milestone III IPR for RTCC						X			
Prepare RFP for Prod. Contract for RTCC									
Conduct Evaluation Board for contract for RTCC									
Conduct Market Investigation for Heavy Lift Container Handler									
Develop performance specifications for MHE									
Conduct market investigations for warehouse MHE									
Conduct market investigations for other general MHE									

*Milestone completed

Project DH14

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

**0604804A Logistics & Engineer Equipment -
Engineering Development**

**PROJECT
DH14**

[illegible]

Government Furnished Property : None

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			DH14		
5 - Engineering and Manufacturing Development	0604804A Logistics & Engineer Equipment - Engineering Development					
	Total					
	Prior to					
	FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	1541		2874		Cont	Cont
Subtotal Support and Management	1887	84	750	93	Cont	Cont
Subtotal Test and Evaluation	1020		1056		Cont	Cont
Total Project	4448	84	4680	93	Cont	Cont
Project DH14						
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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development								DL39	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DL39 General Support Equipment Engineering Development		1599	2215	2511	2177	2126	4683	4241	Continuing	Continuing	
<p>A. Mission Description and Justification: Develop and transition to procurement water purification equipment, maintenance equipment and environmental control units (ECU) that do not use ozone depleting refrigerants.</p> <p>Acquisition Strategy: Development and transition to competitive procurement for all items under this project.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 62 Tested 18K British Thermal Units per Hour (BTUH) ECU components in prototype layout. 100 Prepared data package for improved ECU procurement. 470 Performed technical feasibility testing of candidate pretreatment and reverse osmosis element configuration. 200 Conducted multiple market investigations of component technologies. 767 Prepared purchase description and contract solicitation for Engineering and Manufacturing Development (EMD) Contract. <p>Total 1599</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 426 Fabricate large diesel prototype heater (250K + BTUH). 1400 Design and fabricate EMD prototype 1500 GPH Reverse Osmosis Water Purification Unit (ROWPU). 335 Prepare production qualification test (PQT) and initial operational test and evaluation (IOTE) test plan for the 1500 GPH ROWPU. 54 Small Business Innovative Research/Small Business Technology Transfer Programs. <p>Total 2215</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 100 Develop purchase description for 18K BTUH ECU. 150 Develop purchase description for large diesel heaters (250K + BTUH). 312 Complete testing of large heater prototypes. 450 Complete fabrication of 1500 GPH ROWPU prototypes. 											

Project DL39

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PROJECT

5 - Engineering and Manufacturing Development

**0604804A Logistics & Engineer Equipment -
Engineering Development**

FY 1999 Planned Program: (continued)

- 1200 Conduct PQT and IOT&E on the 1500 GPU ROWPU.
- 2999 Update Program Management Documentation for MS III IPR.

Total 2511

B. Project Change Summary

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1641	2286	2589
Appropriated Value	1602	2286	
Adjustments to Appropriated Value	-3	-71	
FY 1999 President's Budget	1599	2215	2511

C. Other Program Funding Summary

C. Other Program Funding Summary	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
								Compl	Cost
								Cont	Cont
RDTE, 0603804.DK39, General Support Equipment Advanced Development	787	1637	1777	2001	2137	2472	2490	Cont	Cont
OPA 3, ML5335, Items Less Than \$2.0M (Water Equipment)	2968	2795	1255	1938	1775	1021	775	Cont	Cont
OPA 3, R05100, Water Purifier Unit Reverse Osmosis 3000 GPH					21232	27177	19439	Cont	Cont
OPA 3, R05200, Water Purifier Unit Reverse Osmosis 1500 GPH				11306	11242	21428	11233	Cont	Cont
OPA3, ME9300, Air Conditioners, Various Sizes	1461	1433	4650	4498	4588	1382	7064	Cont	Cont

D. Schedule Profile

D. Schedule Profile		FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2	3
Fabricate Large Heater EMD prototype							
Develop 18K ECU purchase description							
Develop large diesel heater purchase							

X*

Completed Purchase Description of 1500
GPH ROWPU EMD prototype.

Project DL39

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development							February 1998
D. <u>Schedule Profile</u>		FY 1997							PROJECT
		1	2	3	4	1	2	3	DL39
Completed 1500 GPU ROWPU EMD contract solicitation package.					X*				
Released EMD RFP for 1500 GPU ROWPU.									
Award EMD contract for 1500 GPU ROWPU.									
Conduct CDR.									
Complete 1500 GPU ROWPU prototype fabrication.									
Complete contractor testing.									
Initiate PQT/EUT.									
* Milestone completed									

Project DL39

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

DL39

A. Project Cost Breakdown	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Hardware Development	562	1127	1044
Operational Test and Evaluation		20	50
Development Test and Evaluation		121	459
Government Engineering and Support	912	822	833
Government Program Support	125	125	125
Total	1599	2215	2511

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--	---	--------------------------	-------------------------	--------------------	------------------------	---------	---------	---------	--------------------	---------------

Product Development Organizations

TARDEC/ MIPR	Various				503	1074	1144	1280	Cont	Cont
CECOM										
Contractor CPFF	2Q98				727	400	544	175	Cont	Cont
Support and Management Organizations:										
TARDEC/ MIPR	Various				1572	125	437	606	Cont	Cont
Various										

Test and Evaluation Organizations:

TECOM	MIPR	Various					70	400	Cont	Cont
OPTEC	MIPR	Various					20	50	Cont	Cont
Government Furnished Property :	None									

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

	1230	1474	1688	1455	Cont
	1572	125	437	606	Cont
	2802	1599	90	450	Cont
			2215	2511	Cont

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development								DL41	
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DL41	Fuels and Equipment Engineering Development	941	1038	1086	1069	1068	1332	1346	Continuing	Continuing	
<p>A. Mission Description and Justification: Develop and transition to procurement petroleum storage and distribution systems.</p> <p>Acquisition Strategy: Development of and transition to competitive procurement for all items under this project.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 35 Awarded Improved Tactical Fuel Distribution and Storage (ITFDS). 621 Designed and fabricated ITFDS initial prototypes. 150 Initiated ITFDS component testing. 85 Procured long lead items for Petroleum Quality Assessment System (PQAS) prototypes. 50 Completed long term exposure testing of tank fabrics. <p>Total 941</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 150 Prepare contract package for PQAS Engineering and Manufacturing Development (EMD) contract. 70 Administer source selection process for PQAS. 205 Develop PQAS specification. 362 Continue fabrication, assembly and testing ITFSD components. 225 Prepare EMD, Baseline Cost Estimate, and Market Investigation for Remote Refueling & Rearming Deployable Distribution System (R3D2S). 26 Small Business Innovative Research/Small Business Technology Transfer. <p>Total 1038</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 942 Award and administer PQSL EMD contract for design, fabrication and test system prototype. 144 Conduct MS I/III decision for R3D2S and complete performance specification. <p>Total 1086</p>											

Project DL41

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

**0604804A Logistics & Engineer Equipment -
Engineering Development**

PROJECT

DL41

B. Project Change Summary

**FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget**

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
	1011	1071	1081
	987	1071	
	-46	-33	
	941	1038	1086

C. Other Program Funding Summary

RDTE, 0603804.DK41, POL Distribution
Equipment Advanced Development
OPA 3, ML5330, Items Less Than \$2.0M (

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To Compl Cont	Total Cost Cont
850	832	829	909	907	963	970		
6467	7055	4657	3754	3798	4673	4394	Cont	Cont

D. Schedule Profile

- Awarded ITFDS contract for small lightweight pumps.
- Designed and fabricated ITFDS component prototypes and initiated testing.
- Procured long lead time items for PQAS EMD prototypes.
- Develop PQAS specification.
- Prepare contract package for PQAS.
- Administer source selection process.
- Award POAS contract.

	FY 1997				FY 1998				FY 1999			
	2	3	4	1	2	3	4	1	2	3	4	
X*												
X*												
					X							
						X						
							X					
								X				

***Milestone completed**

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE _____

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

**0604804A Logistics & Engineer Equipment -
Engineering Development**

PROJECT

DL41

<u>A. Project Cost Breakdown</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Hardware Development	421	301	751
Test and Evaluation	46	230	80
Government Engineering and Support	400	417	165
Government Program Support	50	90	90
SBIR/STTR	24		
Total	941	1038	1086

B. Budget Acquisition History and Planning Information

Performing Organizations				Performing Activity	Award or Obligation Date	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Contractor or Government	Method/Type or Funding Vehicle	Contract										
Product Development Organizations:												
TARDEC	In-House		Various				540	612	417	316	Cont	Cont
Contractor	Various		Various				1671	281	226	620	Cont	Cont
Support and Management Organizations:												
TEXCOM	MIPR		Feb 94				30					Cont
ARL/Navy/Misc	Various		Various				185	48	125	20	Cont	Cont
Test and Evaluation Organizations:												
TECOM	MIPR		Various				137		50	30	Cont	Cont
Contractor	CPFF		Various						220	100	Cont	Cont
Government Furnished Property - None												
Subtotal Product Development							2211	893	643	936	Cont	Cont
Subtotal Support and Management							215	48	125	20	Cont	Cont
Subtotal Test and Evaluation							137		270	130	Cont	Cont
Total Project							2563	941	1038	1086	Cont	Cont

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998						
BUDGET ACTIVITY	PE NUMBER AND TITLE				PROJECT				
5 - Engineering and Manufacturing Development	0604804A Logistics & Engineer Equipment - Engineering Development				DL42				
COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL42 Camouflage System Engineering Development	889	869	781	370	358	306	313	Continuing	Continuing
<p>A. Mission Description and Justification: Project DL42 provides for development and transition to procurement low cost, low observable systems for suppression of visual, near-infrared, thermal, radar, and acoustic signatures of highly mobile and semi-mobile weapon assets.</p> <p>Acquisition Strategy: Develop camouflage systems for the Services and transition items to competitive procurement.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 489 Developed Ultra-Lightweight Camouflage Net System (ULCANS) for the desert 200 Evaluated Production Proveout Testing (PPT) results 200 Conducted desert visual evaluation test; prepared desert TEMP. <p>Total 889</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 847 Reprogrammed to address high priority requirements for the Army Enterprise Architecture 22 Small Business Innovation Research/Small Business Technology Transfer Program <p>Total 869</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 200 Prepare draft desert ECP for ULCANS 200 Finalize Production Qualification Test/Operational Test (PQT/OT) plan 381 Initiate desert PQT/OT testing <p>Total 781</p> <p>B. Project Change Summary</p> <p>FY 1998/1999 President's Budget</p> <p>Appropriated Value 942 896 843</p> <p>Adjustments to Appropriated Value 919 896 -27</p> <p>FY 1999 President's Budget 889 869 781</p>									
<p>Project DL42</p> <p>Page 22 of 42 Pages</p> <p>Exhibit R-2 (PE 0604804A)</p>									

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development						February 1998	DL42
<u>C. Other Program Funding Summary</u>									
RDTE, 0602712.AH35, Camouflage Technology		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total
			799	2058	2161	2486	2538	2598	Cost
									Cont
<u>D. Schedule Profile</u>									
Completed PPT and testing of Desert ULCANS P3I MDR		FY 1997							To
Complete Desert ULCANS P3I MDR									Compl
PQT/OT Testing									Cont
		1	4	1	3	4	2	3	
			X*					4	
									X

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			DL42
5 - Engineering and Manufacturing Development	0604804A Logistics & Engineer Equipment - Engineering Development			
A. Project Cost Breakdown				
Government Engineering Support	FY 1997	FY 1998	FY 1999	
Contractor Engineering Support	379	0	380	
Developmental Test and Evaluation	310	0	209	
Travel	150	0	140	
Miscellaneous	30	0	28	
SBIR/STTR	20	847	24	
Total	889	22	781	
B. Budget Acquisition History and Planning Information: Not applicable.				

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development								DL43																	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																	
DL43	Combat Service Support Equipment Engineering Development	0	0	190	63	630	297	1159	Continuing	Continuing																	
<p>A. Mission Description and Justification: Develops engineer support equipment such as firetrucks, electrical distribution systems, and floodlights which are used for garrison and field operations.</p> <p>Acquisition Strategy: EMD and transition to production.</p> <p>FY 1997 Accomplishments: Project not funded in FY 1997</p> <p>FY 1998 Planned Program: Project not funded in FY 1998</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 50 Development of performance specifications for multiple Engineer Support Equipment (ESE). • 85 Conduct market investigation for multiple ESE items. • 55 Conduct market investigation testing for multiple ESE items. <p>Total 190</p> <p>B. Project Change Summary</p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> <td>1114</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>0</td> <td>190</td> </tr> </table> <p>Change Summary Explanation: Funding: FY 1999 - Project was decreased (-924) in FY99 due to realignment to higher Army priority requirements.</p>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	0	1114	Adjustments to Appropriated Value				FY 1999 President's Budget	0	0	190
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																								
Appropriated Value	0	0	1114																								
Adjustments to Appropriated Value																											
FY 1999 President's Budget	0	0	190																								

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development							February 1998
									PROJECT
									DL43
C. Other Program Funding Summary		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To
									Compl
									Cont
OPA 3, M15800, Truck, Firefighting, Multipurpose				1708	4223	4329	4523	4657	
OPA 3, M72100, Floodlight Set, Electric, Trailer Mounted				1994	2267	2263	4233	4384	
OPA 3, ML5325, Items Less than \$2.0M (CSS Equipment)		3681	1973	4749	6635	7820	11290	13331	
									Cont
D. Schedule Profile		FY 1997					FY 1998	FY 1999	
		1	2	3	4	1	2	3	4
Conduct market investigation									
Conduct pre-production testing								X	
Develop performance specifications								X	
									X

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

**0604804A Logistics & Engineer Equipment -
Engineering Development**

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BUDGET ACTIVITY		RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998				
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT		D194				
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development								
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D194	Engine Driven Generators Engineering Development	2279	7302	9059	8273	5375	2171	2579	Continuing	Continuing
<p>A. Mission Description and Budget Item Justification: Develop and transition to procurement a series of diesel engine driven generator sets/auxiliary power units and provide continual modernization of fielded sets in order to meet federally mandated environmental statutes with reduced weight and size with reduced thermal signatures.</p> <p>Acquisition Strategy: Develop and transition to competitive procurement all items in this project.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 130 Completed testing of 5kW 28 Volts Direct Current (VDC), Production Qualification Test (PQT) models. 179 Completed preparation of formal program review of 5kW 28VDC Auxiliary Power Units (APU). 1568 Continued development contracts for 3kW Tactical Quiet Generators (TQG). 402 Evaluated designs for 3kW TQG generator sets from competitive contract. Total 2279 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 2400 Continue hardware development for 3kW TQG. 1668 Test and Evaluation for the 3kW TQG. 759 Develop logistics data for the 3kW TQG. 1926 Initiate hardware development for Prime Power System (PPS). 375 Initiate 100 & 200kW Utility Set Program. 174 Small Business Innovative Research/Small Business Technology Total 7302 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 444 Complete development, testing and transition 3kW generator set to procurement. 5015 Complete hardware and initiate test/evaluation of PPS. 3600 Initiate hardware development for 100 & 200kW sets. Total 9059 										
Project D194		Exhibit R-2 (PE 0604804A)								

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE					DATE		PROJECT
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development					February 1998		D194
B. Project Change Summary		FY 1997	FY 1998	FY 1999	FY 1999	FY 1999			
FY 1998/1999 President's Budget		2183	7534	9015					
Appropriated Value		2138	7534						
Adjustments to Appropriated Value		+141	-232						
FY 1999 President's Budget		2279	7302	9059					
C. Other Program Funding Summary		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total
RDT&E:PE0603804A/DG11		214	207	1377	1032	755	628	1096	Cost
OPA,BA3:Generators & Assoc Equip (MA9800)		27308	7526	82749	81505	89954	47613	71883	Cont
D. Schedule Profile		FY 1997	FY 1998	FY 1999	FY 1998	FY 1999			
1		2	4	1	2	4	1	2	3
Begin fabrication of 5kW 28VDC APU PQT models		3			3				4
Begin testing of 5kW 28VDC APU PQT models									
Complete fabrication of 5kW 28VDC PQT models									
Completed testing of 5kW 28VDC APU PQT models									
Completed preparation of formal program Review of 5kW 28VDC APU									
Begin development of 3kW (TQG)									
Award competitive contracts for design And prototype development of 3kW sets (Phase I)									
Evaluated competitive designs for Lightweight 3kW generator sets (Phase I)									
Continued hardware development and complete Phase I, down select to one contractor, and initiate Phase II hardware delivery, testing and logistics data									
Project D194									

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

D194

D. Schedule Profile

FY 1999

FY 1998

FY 1997

1

2

3

4

1

2

3

4

1

2

3

4

1

2

3

4

1

2

3

4

Complete data and testing and transition
3kW to procurement (Milestone III)
Award multiple contracts for competitive
designs of Prime Power Systems (PPS)
Evaluate PPS designs and down select to
single contractor

Award Phase II of PPS EMD for
fabrication/test/eval/data

Initiate EMD testing of PPS

Initiate EMD program on 100 & 200kW
utility sets

Award multiple contracts for competitive
designs/hardware/testing of 100 & 200kW
sets

*Denotes completed milestone

X

X

X

X

X

X

X

Project D194

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -

PROJECT

D194

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
A. Project Cost Breakdown			
Primary Hardware Development	1473	3795	5400
Test and Evaluation	130	1668	1944
Government Engineering & Support	481	1100	1200
Program Management	110	565	515
Miscellaneous	85	174	
Total	2279	7302	9059

B. Budget Acquisition History and Planning Information

Performing Organizations

[illegible]

Product Development Organizations

Contractors	CPFF	9406	1448	4700	6600	Cont	13608
Various							

Support and Management Organizations: None

Test and Evaluation Organizations

Miscellaneous:

Model	Various	NA	556	1734	1715
	Cont	Cont	Cont	Cont	Cont
CECOM	Various	NA	556	1734	1715
TECOM	MIPR	Various	275	868	744

Government Furnished Property: None

Subtotal Product Development	1122	1448	4700	6600	Cont
Subtotal Miscellaneous	821	831	2602	2459	Cont
Total Project	1943	2279	7302	9059	Cont

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BUDGET ACTIVITY		RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998		PROJECT	
5 - Engineering and Manufacturing Development		PE NUMBER AND TITLE		0604804A Logistics & Engineer Equipment - Engineering Development		D279		D279	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Total Cost
D279	Airdrop Equipment Engineering Development	1326	1317	1361	1395	1393	4961	5738	Continuing
<p>A. Mission Description and Justification: Develop and transition to procurement cargo and personnel parachutes, airdrop containers and other aerial delivery equipment to improve safety and efficiency of airborne operations.</p> <p>Acquisition Strategy: Rapid development thru the acquisition life cycle using all available opportunities to accelerate development into production and fielding.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 1050 Awarded contract for Component Development and Performance Validation of Advanced Reserve Parachute System (ARPS). ARPS is a sub-system component of Advanced Tactical Parachute System (ATPS). 276 Conducted Concept Evaluation of potential system components for 500 foot Low Velocity Airdrop System (LVADS) (Medium). Provided improved delivery accuracy, and survivability of US Army loads, and increased survivability for USAF aircraft and aircrew delivering. <p>Total 1326</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 1084 Continue component development and performance validation contract of ARPS. 200 Perform contractor testing of ARPS. 33 Small Business Innovative Research/Small Business Technology Transfer Programs. <p>Total 1317</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 307 Initiate developmental testing of ARPS. 1054 Conduct developmental testing of ARPS. <p>Total 1361</p>									

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

D279

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	871	159	761
Program Management Support	155	200	150
Test and Evaluation	300	958	450
Total	1326	1317	1361

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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Product Development Organizations

SSCOM	In-House				17883	871	159	761	Cont	Cont
Metric Systems	TBD								Cont	Cont
MICOM	MIPR								Cont	Cont

DA Staff
Def Eval Spt Acty
Army Nat'l Guard

Support and Management Organizations

SSCOM					2576	155	200	150	Cont	Cont
-------	--	--	--	--	------	-----	-----	-----	------	------

Test and Evaluation Organizations

SSCOM	In-House				6318	300	958	450	Cont	Cont
Ft. Bragg	MIPR									
TECOM/YPG										

Government Furnished Property: None

Subtotal Product Development					17883	871	159	761	Cont	Cont
Subtotal Support and Management					2575	155	200	150	Cont	Cont
Subtotal Test and Evaluation					6318	300	958	450	Cont	Cont
Total Project					26776	1326	1317	1361	Cont	Cont

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development								D429	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D429	Rigidwall Shelter Engineering Development	3109	1451	911	1172	1645	2200	2219	Continuing	Continuing	
<p>A. Mission Description and Justification: Develops a series of Rigid Wall Shelters (RWS) with added capabilities and enhanced survivability.</p> <p>Acquisition Strategy: Developments transition to procurement funded through PM interchange requirements except the Large Standard Integrated Command Post System (SICPS) shelter will be procured through OPA2.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 594 Completed panel testing for Upgraded Lightweight Multipurpose Shelter (LMS) prototype. 492 Completed design and prototype fabrication of integral environmental control unit for International Standards Organization (ISO) Component Pre-Planned Product Improvement (P3I). 2023 Completed development and began testing of a combined power/environmental control/CB protection system and lightweight camouflage for the Objective Version SICPS Shelter. <p>Total 3109</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 957 Fabricate Upgraded LMS prototypes and initiate testing. 458 Complete testing of the Objective SICPS Shelter. 36 Small Business Innovative Research/Small Business Technology Transfer Programs. <p>Total 1451</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 462 Complete testing of Upgraded LMS. 449 Complete MS I/II for Cargo Bed Cover (CBC) 1 1/2 Ton M105 Trailer Variant and award LRIP Contract with production options. <p>Total 911</p>											

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**0604804A Logistics & Engineer Equipment -
Engineering Development**

D429

	FY 1997	FY 1998	FY 1999
1. Operating Expenses			
2. Operating Income			
3. Non-Operating Income			
4. Non-Operating Expenses			
5. Income Before Income Taxes			
6. Income Taxes			
7. Net Income			
8. Other Comprehensive Income			
9. Comprehensive Income			
10. Retained Earnings			
11. Dividends			
12. Other Equity Changes			
13. Equity			
14. Assets			
15. Liabilities			
16. Other Comprehensive Income			
17. Comprehensive Income			
18. Retained Earnings			
19. Dividends			
20. Other Equity Changes			
21. Equity			
22. Assets			
23. Liabilities			
24. Other Comprehensive Income			
25. Comprehensive Income			
26. Retained Earnings			
27. Dividends			
28. Other Equity Changes			
29. Equity			
30. Assets			
31. Liabilities			
32. Other Comprehensive Income			
33. Comprehensive Income			
34. Retained Earnings			
35. Dividends			
36. Other Equity Changes			
37. Equity			
38. Assets			
39. Liabilities			
40. Other Comprehensive Income			
41. Comprehensive Income			
42. Retained Earnings			
43. Dividends			
44. Other Equity Changes			
45. Equity			
46. Assets			
47. Liabilities			
48. Other Comprehensive Income			
49. Comprehensive Income			
50. Retained Earnings			
51. Dividends			
52. Other Equity Changes			
53. Equity			
54. Assets			
55. Liabilities			
56. Other Comprehensive Income			
57. Comprehensive Income			
58. Retained Earnings			
59. Dividends			
60. Other Equity Changes			
61. Equity			
62. Assets			
63. Liabilities			
64. Other Comprehensive Income			
65. Comprehensive Income			
66. Retained Earnings			
67. Dividends			
68. Other Equity Changes			
69. Equity			
70. Assets			
71. Liabilities			
72. Other Comprehensive Income			
73. Comprehensive Income			
74. Retained Earnings			
75. Dividends			
76. Other Equity Changes			
77. Equity			
78. Assets			
79. Liabilities			
80. Other Comprehensive Income			
81. Comprehensive Income			
82. Retained Earnings			
83. Dividends			
84. Other Equity Changes			
85. Equity			
86. Assets			
87. Liabilities			
88. Other Comprehensive Income			
89. Comprehensive Income			
90. Retained Earnings			
91. Dividends			
92. Other Equity Changes			
93. Equity			
94. Assets			
95. Liabilities			
96. Other Comprehensive Income			
97. Comprehensive Income			
98. Retained Earnings			
99. Dividends			
100. Other Equity Changes			
101. Equity			
102. Assets			
103. Liabilities			
104. Other Comprehensive Income			
105. Comprehensive Income			

3193	1498	1024
------	------	------

3115 1498

-6. -47

3109 1451 911

Change Summary Explanation: Funding: FY 1999 was decreased (-182) due to realignment to higher priority requirements.

C. Other Program Funding Summary

RDTE, 0603804.D428, Rigidwall Shelter
Engineering Development

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
	3726	2356	875	993	1529	2009	2025	Cont	Cont

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

0604804A Logistics & Engineer Equipment -
Engineering Development

PROJECT

D429

5 - Engineering and Manufacturing Development

D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
Completed LMS Upgrade Panel Testing			X*						
Completed Design/Fabrication of Integral ECU Prototypes ISO P3I				X*					
Fabricate Upgraded LMS Prototypes and initiate Technical Testing									
Complete testing of the Objective SICPS Shelter					X				
Complete Upgraded LMS Testing									
Complete Milestone I/II for 1 1/2 Ton Trailer CBC Variant					X				
Award LRIP Contract for 1 1/2 Ton Trailer CBC Variant							X		
Award Development/Production contract for the 3/4 Ton CBPS Variant							X		

* Denotes completed activity

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

D429

A. Project Cost Breakdown

Primary Hardware Development	FY 1997	FY 1998	FY 1999
Program Management Support	1417	714	406
Test and Evaluation	812	369	252
	880	368	253
Total	3109	1451	911

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
SSCOM	In-House				13620	1417	714	406	Cont	Cont
DEEPCO	Various									
(Also Radian, GTS.)										
Ft. Belvoir										
(Also TEXCOM, ATCOM, USA										
Med, ARL, Army										
Nat'l Guard.)										
Support and Management Organizations										
SSCOM					6041	812	369	252	Cont	Cont
Test and Evaluation Organizations										
TECOM					9125	880	368	253	Cont	Cont

Government Furnished Property: None

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development	0604804A Logistics & Engineer Equipment - Engineering Development				D429
	Total				
	Prior to				
	FY 1997	FY 1997	FY 1998	FY 1999	Budget to
	13620	1417	714	406	Complete
Subtotal Product Development	6041	812	369	252	Cont
Subtotal Support and Management	9125	880	368	253	Cont
Subtotal Test and Evaluation	28786	3109	1451	911	Cont
Total Project					Cont

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BUDGET ACTIVITY		DATE		PROJECT																		
RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		February 1998		D461																		
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT																		
5 - Engineering and Manufacturing Development		0604804A Logistics & Engineer Equipment - Engineering Development		D461																		
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost												
D461	Marine Oriented Logistics Equipment Engineering Development	0	0	2085	4467	1514	1260	2881	Continuing	Continuing												
<p>A. Mission Description and Justification: This project provides for the engineering development of Army watercraft systems. FY99 efforts will center on the completion of Containerized Maintenance Facility (CMF) Development (this item replaces current Floating Machine Shops). Components for the CMF have been identified as a result of prior initiatives. However, Container/Shelter Configuration and Packaging Configurations still require additional development. Strategy is to complete remaining developmental activity, then immediately commence acquisition, assembly and packaging in the same fiscal year (FY 99). This will allow early fielding and consequent retirement of the costly Floating machine Shop. Program also includes engineering development of the Port Communications and Control Center (PCCC). This program will provide for the safe and effective management of Army and Joint Port Operations during deployment of forces; both under Logistics Over The Shore (LOTS) conditions and operations in existing port facilities.</p> <p>Acquisition Strategy: CMF: In house completion of Engineering Development and initiation of Follow-on Acquisition by the Construction Battalion Center (CBC). Port Communication and Control Center (PCCC) - competitive procurement to performance specification.</p> <p>FY 1997 Accomplishments: Project not funded in FY 1997</p> <p>FY 1998 Planned Program: Project not funded in FY 1998.</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 2000 Full scale development of the Containerized Maintenance Facility (CMF). • 85 Initiate development of the PCCC. Total 2085 <p>B. Project Change Summary</p> <table> <tr> <td>FY 1998/1999 President's Budget Appropriated Value</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>0</td> <td>0</td> <td>2195</td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>0</td> <td>2085</td> </tr> </table>											FY 1998/1999 President's Budget Appropriated Value	FY 1997	FY 1998	FY 1999	Adjustments to Appropriated Value	0	0	2195	FY 1999 President's Budget	0	0	2085
FY 1998/1999 President's Budget Appropriated Value	FY 1997	FY 1998	FY 1999																			
Adjustments to Appropriated Value	0	0	2195																			
FY 1999 President's Budget	0	0	2085																			

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PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604804A Logistics & Engineer Equipment -
Engineering Development

D461

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
RDTE, 0603804A, D526, Marine Oriented Logistics, Advanced Development	13888	13744	10983	2294	4014	4127	3427		
OPA 3, M32400, Floating Crane, 100-250 Ton	7599	6597	4269						
OPA 3, M44500, Pusher Tug, Small									
OPA 3, R09600, Causeway, Powered System				8260		4327	1000		
OPA 3, R09600, RO/RO Discharge Platform			17083	4818	18639	4718	4833		
OPA 3, R09900, Causeway, Floating				5028					
OPA 3, M11200, Logistic Support Vessel (LSV)				18528		18875	19333		
OPA 3, M11201, Logistic Support Vessel (ESP)					6229	7456	14015		
OPA 3, M32500, Rapidly Installed Breakwater							5000		
OPA 3, M11300, Containerized Maintenance Facility			5300		958				

D. Schedule Profile

	FY 1997	FY 1998	FY 1999
Pusher Tug material release	1	2	3
Floating Crane Milestone I/III	X*	4	1
Floating Crane contract award		X	2
Containerized Maintenance Facility Award			3
Port Communications & Control Center (PCCC) Contract Award		X	X

*Denotes completed effort

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BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE	PROJECT
RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		0604804A Logistics & Engineer Equipment - Engineering Development		February 1998	D461
A. Project Cost Breakdown					
Government Engineering Support (includes test & evaluation					
Contract Engineering					
Program Management Support					
Total					
		FY 1997	FY 1998	FY 1999	
		0	0	1950	
				85	
				50	
				2085	
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or	Method/Type	Award or	Performing	Total	
Government	Contract	Obligation	Activity	Prior to	
Performing	or Funding	Date	EAC	FY 1997	
Activity	Vehicle			FY 1998	
				FY 1999	
Product Development Organizations					
Construction	MIPR			1950	Cont
Battalion Center					
International	SS-FP			85	Cont
Consultants, Inc.					
Support and Management Organizations					
ATCOM/TACOM	MIPR	Various			
Test and Evaluation Organizations: None					
Government Furnished Property: None					
Subtotal Product Development					
Subtotal Support and Management					
Subtotal Test and Evaluation					
Total Project					
				2035	Cont
				50	Cont
				2085	Cont
Total Project					

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)							DATE		February 1998		
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604805A Command, Control, Communications Systems - Engineering Development									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	13315	10710	16404	17616	17119	17020	16916	Continuing	Continuing	
D097	C3I Interoperability Network Activity	1902	4049	4295	3214	3247	3152	3289	Continuing	Continuing	
D098	Tactical Radio Accessories	526	492	469	0	0	0	0	0	4665	
D282	SINGGARS-V Engineering Development	6715	0	0	0	0	0	0	0	19729	
D485	C4I Interoperability Standardization and Certification	4172	3106	5103	5478	4863	4640	4513	Continuing	Continuing	
D589	Army Systems Engineering & Warfighter Technical Support	0	3063	6537	7824	7909	8128	8014	Continuing	Continuing	
D591	Weapons System Technical Architecture	0	0	0	1100	1100	1100	1100	Continuing	Continuing	

Mission Description and Budget Item Justification: Supports the Army Enterprise Strategy to achieve interoperability within the Army and with the Joint/Combined forces. This program includes Engineering and Manufacturing Development (EMD), integration and interoperability support for Army command, control, communications, computer, intelligence, electronic warfare and sensor (C4IEWS) systems, and the supporting interoperability facilities/tools. Also included is engineering development of life-cycle capability to develop, test, and maintain interoperability, and support an interoperability development and evaluation process consisting of an Army interoperability board and technical management to ensure that the integration of new technologies for emerging systems support joint interoperable Force XXI architecture for Army battlefield digitization. Also included is the Army portion of engineering development efforts in support of the Combat Survivor Evader Locator System (CSEL). This includes the Single Channel Ground and Airborne Radio System (SINGGARS) product improvements identified in the SINGGARS System Improvement Plan; the Frequency Hopping Multiplexer (FH MUX) which allows multiple radios to operate on one antenna for reduced visual signature and rapid transportability and set-up; and follow-on programs to demonstrated technologies evolving from Wireless Network Access, Communications Network Planning and Management and initiatives to establish a Multiband Radio Integrated testbed. The projects in this Program Element support research efforts in the engineering and manufacturing development phase of the acquisition process and therefore are correctly placed in Budget Activity 5.

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications

D097

Systems - Engineering Development

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	1902	4049	4295	3214	3247	3152	3289	Continuing	Continuing
D097 C3I Interoperability Network Activity									

A. Mission Description and Budget Item Justification: Project D097 - C3I Interoperability Network: Support warfighter systems' interoperability with a virtual command, control, communications, computer, intelligence, electronic warfare and sensor (C4IEWS) Digital Integration Lab (DIL) to help integrate the Army's programs and products, horizontally and vertically for the digitized battlefield, by replicating current and future tactical battlefield environments and enabling/facilitating comprehensive evaluations of new prototypes, evolutionary system developments, new technologies, commercial products, software and systems interoperability. Develop and operate the communications Army Interoperability Network (AIN) to electronically interconnect remote C4IEWS systems, labs/testbeds, field/integration sites, developers facilities and Battle Labs. Develop and apply protocol test tools to assure the capability to support and assess interoperability and compliance with the Joint/Army Technical Architecture's Variable Message Format (VMF) and MIL-STD-188-220 protocol standards suites.

Acquisition Strategy: The efforts funded in this project are non-system specific, therefore no acquisition strategy is provided.

FY 1997 Accomplishments:

- 675 Developed/operated AIN 45-node nationwide system for over 8000 test-days supporting Task Force XXI, ACTDs, Joint tests and fielded systems
- 390 Systems engineering of AIN design, analysis, integration, installation and test support (8 new user network nodes, and enhanced network diversity)
- 560 Provided core AIN network connections to link geographically dispersed network hubs/sites
- 277 Provided AIN technology improvements/system upgrades for emerging requirements (remote SINGARS interface, wireless link, transportability)
- Total 1902

FY 1998 Planned Program:

- 630 Develop and operate the AIN core capabilities to facilitate test, experimentation and evaluation of Army C4IEW systems interoperability/software development/sustainment (for Division XXI AWE, ACTDs, Joint tests and tactical systems - estimate 10,000 test-days)
- 389 Systems engineering of AIN design, analysis, integration, installation and test support for C4IEWS system requirements
- 554 Provide core AIN network connections to link geographically dispersed network hubs/sites
- 293 Provide technology improvements and system upgrades to meet emerging test support requirements for C4IEWS systems and Force XXI
- 580 Provide external DIL connectivity to remote battlefield digitization sites
- 341 Upgrade, operate and support DIL Evaluation & Certification Testbed and other facilities supporting the battlefield digitization
- 293 Acquire/update DIL hardware and software interfacing systems, test tools, and supporting systems for 1st Digitized Division and TA/SA evaluations
- 348 Acquire DIL automated scenario drivers and test analysis tools for 1st Digitized Division evaluations and TA/SA evaluations

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications
Systems - Engineering Development

D097

FY 1998 Planned Program: (continued)

- 282 Develop VMF test tool, Builds 2 & 3, to support correct C4IEWS system implementations of the Joint/Army Technical Architecture's VMF standard
- 237 Develop Mil-Std-188-220 protocol test tool Conformance Tester capability for to support correct C4IEWS system implementations of the Joint/Army Technical Architecture's 188-220 protocol
- 102 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 4049

FY 1999 Planned Program:

- 750 Develop and operate the AIN core capabilities to facilitate test, experimentation and evaluation of Army C4IEW systems interoperability/software development/sustainment (for Force XXI modernization, ACTDs, Joint tests and tactical systems)
- 400 Systems engineering of AIN design, analysis, integration, installation and test support for C4IEWS system requirements
- 600 Provide core AIN network connections to link geographically dispersed network hubs/sites
- 300 Provide AIN technology improvements and system upgrades to meet emerging test support requirements for C4IEWS systems and Force XXI
- 650 Provide external DIL connectivity to remote battlefield digitization sites
- 350 Upgrade, operate and support DIL Evaluation & Certification Testbed and other facilities supporting the battlefield digitization
- 300 Acquire/update DIL hardware and software interfacing systems, test tools, and supporting systems for 1st Digitized Division and TA/SA evaluations
- 421 Acquire DIL automated scenario drivers and test analysis tools for 1st Digitized Division evaluations and TA/SA evaluations
- 282 Develop VMF test tool, Build 4, to support correct C4IEWS system implementations of the Joint/Army Technical Architecture's VMF standard
- 242 Develop Mil-Std-188-220 protocol test tool Network Analyzer combat radio network diagnosis; evolve capabilities with evolution of the standards
- Total 4295

B. Project Change Summary

FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	1660	4178	4274
Adjustments to Appropriated Value	1715	4178	
FY 1999 President's Budget Request	187	-129	
	1902	4049	4295

Change Summary Explanation: Funding: FY1997 (+187) Funds reprogrammed to support Task Force XXI Advanced Warfighting Experiment digitization efforts.

C. Other Program Funding Summary: None

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February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications

D097

Systems - Engineering Development

D. Schedule Profile

	FY 1997			FY 1998			FY 1999					
	1	2	3	4	1	2	3	4	1	2	3	4
AIN User Test Support	X											
VMF Tester, Build 2		X	X	X		X	X	X	X	X	X	X
Protocol Tester (PTT) Monitor/Decode v2												
VMF Tester, Build 3												
Protocol Tester (PTT) Conformance v1												
Protocol Tester (PTT) Net Analyzer v1										X		
Protocol Tester (PTT) Conformance v2											X	
VMF Tester, Build 4												X
Protocol Tester (PTT) Net Analyzer v2												X

Project D097

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT
5 - Engineering and Manufacturing Development		0604805A Command, Control, Communications Systems - Engineering Development			D097
A. Project Cost Breakdown		FY 1997	FY 1998	FY 1999	
C4IEWS System Test Support		675	1021	1100	
Systems Engineering		390	390	400	
Core Networking		560	1086	1271	
Technology insertion/upgrade equipment		277	583	605	
Automated scenario driver/tools			348	400	
VMF test tool development			282	282	
Mil-Std-188-220 test tool development			237	237	
SBIR/STTR			102		
Total		1902	4049	4295	
B. Budget Acquisition History and Planning Information: Not applicable					

Project D097

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications

D098

Systems - Engineering Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D098 Tactical Radio Accessories	526	492	469	0	0	0	0	0	4665

A. Mission Description and Budget Item Justification: Project D098 - Tactical Radio Accessories: This project will provide for development efforts for the Combat Survivor Evader Locator System (CSEL), a joint program led by the Air Force. This program will provide service, joint, and/or composite operational recovery/rescue forces with the capability to pinpoint the location of and establish communication with downed personnel in need of extraction from hostile territories. The CSEL system will include the capability to pass data directly into the standard warfighter command, control, communications, computer, and intelligence (C4I) systems. The user's equipment will consist of a small hand-held unit used for geospositioning, over-the-horizon data communications, and two-way line-of-sight voice communications.

Acquisition Strategy: The joint Air Force led acquisition strategy is a research and development approach for the handheld unit, followed by a production contract award in FY98.

FY 1997 Accomplishments:

- 526 Supported Air Force Development efforts on CSEL program
- Total 526

FY 1998 Planned Program:

- 479 Support Air Force Development efforts on CSEL program
- 13 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 492

FY 1999 Planned Program:

- 469 Support Air Force Development efforts on CSEL program
- Total 469

B. Project Change Summary

FY1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY1999 President's Budget

FY 1997	FY 1998	FY 1999
542	508	506
529	508	
-3	-16	
526	492	469

Project D098

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications

**PROJECT
D098**

C. Other Program Funding Summary

**ARMY, OPA2 B03200, Combat Survivor Evader
Locator (CSEL)**

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Compl</u>	<u>Cost</u>	<u>Total</u>
0	5510	13712	18589	7125	7108	7106	0	59150	10

D. Schedule Profile

2 3
FY 1997

FY 1998

FY 1999

CSEL Program Milestone III Decision Operational Assessment IOT&E

$$\mathbf{X} \quad \mathbf{X}$$

IOT&E
Option 2 Contract Award
Option 3 Contract Award

X

X

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

D098

0604805A Command, Control, Communications
Systems - Engineering Development**A. Project Cost Breakdown**

Support Air Force Development efforts on CSEL program

SBIR/STTR

Total

FY 1997

526

FY 1998

479

13

FY 1999

469

469

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or

Government

Performing

Activity

Method/Type

or Funding

Vehicle

Award or

Obligation

Date

Performing

Activity

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications
Systems - Engineering DevelopmentPROJECT
D282

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D282 SINGGARS-V Engineering Development	6715	0	0	0	0	0	0	0	19729

A. Mission Description and Budget Item Justification: Project D282 - SINGGARS-V Engineering Development: This program provided for analysis and implementation of overall product improvements to the SINGGARS Combat Net Radio. Product improvements included are Global Positioning System (GPS) interfaces, Airborne Battlefield Combat Identification System (BCIS), Forward Error Correction (FEC) (data transmission enhancement techniques), improved data capability, weight reduction (to include an Advanced System Improved Receiver Transmitter, Battery Box and Vehicular Applique), MANPRINT (ease of operations), vehicular system re-engineering, improved electronic counter-counter measure (ECCM) performance and switched system dial-up interfacing. Program provides simplified operations, improved performance of existing capabilities, new operational capabilities and reduced life cycle costs.

Acquisition Strategy: The Advanced System Improved Receiver-Transmitter and associated items development design products were used by competitive producers as a part of the FY 97 production competition of the SINGGARS radio.

FY 1997 Accomplishments:

- 3100 Completed development effort for ITT Advanced SIP Radio
- 3100 Completed development effort for GD Advanced SIP Radio
- 515 Program Management Support - Office Automation
- Total 6715

FY 1998 Planned Program: Project not funded in FY98

FY 1999 Planned Program: Project not funded in FY99

B. Project Change Summary

FY1997/1998 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY1999 President's Budget

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
6883	0	0
6715		
6715	0	0

Project D282

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DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications

D282

Systems - Engineering Development

C. Other Program Funding Summary

Army, OPA2 SSN:B00500
 Army, OPA2 SSN:J30500
 Army, OPA2, SSN:Z16800

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
	285707	275960	13212	13476	0	0	0	0	588355
	12117	9239	0	0	0	0	0	0	21356
	13496	0	0	0	0	0	0	0	13496

D. Schedule Profile

	FY 1997	FY 1998	FY 1999
	2	3	2
	3	2	3
	X*		4

1 Award Alternate Configuration Production
 Production Option

Development Contracts

ECP Cut In to Airborne Production

Exercise Alternate Configuration Dev

Contr Opt

X*

* Milestone completed

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

D282

**0604805A Command, Control, Communications
Systems - Engineering Development**

Contractor Engineering

6200

0

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Performing Organizations

Contractor or Contract

Government Method/1

Performing or Fundin

Activity	Vehicle
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Product Development Organizational

ITT Ft. Wayne, IN SS/CPFF

GD Tallasse, FL SS/CPFF

ITT Ft. Wayne, IN SS/CPFFF

Support and Management Or

Misc. TBD

Test and Evaluation Organization

EPG, MD MIPR

Government Furnished Property

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project D282

Project D282

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DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications

D485

Systems - Engineering Development

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D485 C4I Interoperability Standardization and Certification	4172	3106	5103	5478	4863	4640	4513	Continuing	Continuing

A. Mission Description and Budget Item Justification: C4I Interoperability Standardization and Certification: Evaluate system's interoperability for the Army XXI battlefield digitization effort, in support of the Vice Chief of Staff of the Army (VCSA) and Army Acquisition Executive (AAE), to identify interoperability issues, develop certification recommendations, and provide architecture assessments by the Digital Integration Lab (DIL). Interoperability certification recommendations and assessments are provided to the Army Digitization Office (ADO) and Army System Engineer. Establish and sustain interoperability between Army C4I systems, and between the Army and Joint/Allied C4I communities in support of DOD 4630.5, DODI 4630.8, CJSCI 6212.01, and AR73-1. Provide the Army focal point for the review, staffing, coordination, and development of Army positions for interface interoperability standards and specifications. Participate in Joint/Allied and intra-Army interoperability certification testing and represent the Army in the Joint/Allied Configuration Management Process. Develop and configuration manage two key elements of the Joint/Army Technical Architectures - the Variable Message Format (VMF) message and the MIL-STD-188-220 protocol standards, in support of Army Science Board directive and approved Technical Architectures.

Acquisition Strategy: The efforts funded within this project are non-system specific, therefore no Acquisition Strategy is provided.

FY 1997 Accomplishments:

- 207 Evaluated and certified IT/C4ISR systems interoperability to assure compliance with the Technical and System Architectures
- 190 Provided Digital Integrated Laboratory (DIL) Systems Engineering and Integration support
- 731 Developed, evolved and maintained required Variable Message Format (VMF) messages, obtained joint approvals, and published VMF Standards for Task Force XXI
- 265 Developed, maintained, jointly approved and published Mil-Std-188-220A as part of Joint/Army Technical Architectures for Task Force XXI
- 684 Provided testing support and analysis for VMF and Mil-Std-188-220 system implementations for Task Force XXI
- 1180 Army configuration management of Tactical Digital Info Link (TADIL) & U.S. Message Text Format (USMTF) and Joint Certification Testing
- 200 Provided Army certification recommendations to the Joint for (JITC/OJCS)
- 332 Developed and managed Joint Tactical Data Link Management Plan (JTDLMP)
- 383 Developed Joint Information Exchange Requirements (JIERS)
- Total 4172

Project D485

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998	D485
5 - Engineering and Manufacturing Development	0604805A Command, Control, Communications Systems - Engineering Development		
<p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 1217 Evaluate and certify IT/C4ISR systems interoperability to assure compliance with the Technical and System Architectures • 243 Provide DIL System Engineering and Integration support • 243 Identify and resolve systems' discrepancies and inconsistencies identified during evaluations • 243 Evaluate and validate Technical and Systems Architectures • 714 Develop, evolve and maintain required VMF messages, obtain joint approvals, and publish VMF Standards for Division XXI • 369 Provide testing support and analysis for VMF and Mil-Std-188-220 standards and C4IEWS implementations • 77 Small Business Innovative Research/Small Business Technology Transfer Programs Total 3106 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 1375 Evaluate and certify IT/C4ISR systems interoperability to assure compliance with the Technical and System Architectures • 250 Provide DIL System Engineering and Integration support • 350 Identify and resolve systems' discrepancies and inconsistencies identified during evaluations • 250 Evaluate and validate Technical and Systems Architectures • 539 Develop, evolve and maintain required VMF messages, obtain joint approvals, and publish VMF Standards to support Army XXI and architectures • 100 Upgrade and field common data base to support interoperable implementation by VMF users and developers • 217 Develop and evolve Mil-Std-188-220 Protocol Standard (CNR), version-C, an element of the Joint/Army Technical Architectures • 533 Provide testing support and analysis for VMF and Mil-Std-188-220 standards and implementations • 100 Provide Army's Certification recommendations to joint forums (JITC/OJCS) • 949 Provide evaluations, configuration management and control for TADIL & USMTF interface changes • 120 Chair and manage four Army Configuration Control Boards • 120 Represent Army in Joint and Allied Forums • 100 Manage Joint Tactical Data Link Management Plan (JTDLMP) • 100 Develop Joint IERs for VMF and TADILs Total 5103 			

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805A Command, Control, Communications

D485

Systems - Engineering Development

B. Project Change Summary

FY1998/1999 President's Budget

FY 1998

FY 1999

Appropriated Value

471

3205

5078

Adjustments to Appropriated Value

481

3205

-99

FY 1999 President's Budget Request

+3691

3106

5103

Change Summary Explanation: Funding: FY1997 (+3691) Funding reprogrammed to support Force XXI and Joint /Allied Digitization Exercises

C. Other Program Funding Summary: NoneD. Schedule Profile

	FY 1997			FY 1998			FY 1999					
	1	2	3	4	1	2	3	4	1	2	3	4
Army CCBs (TADIL/USMTF)	X	X	X	X	X	X	X	X	X	X	X	X
Army/Joint VMF TIDP (issues)	X	X	X	X	X	X	X	X	X	X	X	X
Joint Mil-Std-188-220A (TFXXI)	X											
Joint Mil-Std-188-220B												
Joint Mil-Std-188-220C												
Joint TDLMF	X											
Joint IERS	X											
Joint Certification Testing	X	X	X	X	X	X	X	X	X	X	X	X

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY			PE NUMBER AND TITLE		D485
5 - Engineering and Manufacturing Development			0604805A Command, Control, Communications Systems - Engineering Development		
A. Project Cost Breakdown			FY 1997	FY 1998	FY 1999
Army Interoperability certification			207	1217	1375
System engineering/integration			190	486	600
Architecture evaluation/validation				243	250
VMF Standards			731	714	639
Mil-Std-188-220 Protocols			265	0	217
VMF/Mil-Std-188-220 Testing			684	369	533
Interface change proposals			780	0	700
C4I systems joint certifications			600	0	500
Information exchange requirements			383	0	189
Tactical Data Link Management Plan coordination			332	0	100
SBIR/STTR				77	
Total			4172	3106	5103
B. Budget Acquisition History and Planning Information: Not applicable					

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998						
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
5 - Engineering and Manufacturing Development		0604805A Command, Control, Communications Systems - Engineering Development		D589						
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D589 Army Systems Engineering & Warfighter Technical Support		0	3063	6537	7824	7909	8128	8014	Continuing	Continuing

NOTE: This is not a new start effort. FY97 program tasks have been resourced through an joint HQDA/HQAMC effort via a series of below-threshold reprogramming actions across multiple program elements and project lines

A. Mission Description and Budget Item Justification: Army Systems Engineering & Warfighter Technical Support: Recommended by the Army Science Board and directed by the Army Acquisition Executive (AAE) and Vice Chief of Staff of the Army (VCSA), the ASE provides essential technology expertise on all Systems Engineering and Technical Architecture (SE/TA) matters critical to gain Information Dominance and foster interoperability among all Army systems. The Joint Technical Architecture-Army (JTA-A) provides the "building code" foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. Army System Engineer (ASE) supports CIO/DISC4/ADO in defining and maintaining the JTA-A and technically influences development and implementation of the JTA. ASE identifies new and emerging standards for integration of new technologies into existing Army Systems and ATD/ACTDs to support Army 2010. The ASE's work efforts associated with the development and implementation of the JTA-A under this project are critical path elements to achieve the Army's DIV XXI, CORPS XXI, and Army XXI digitization mission, provide the ability to fight and win on tomorrow's battlefield, and assure compatibility with both Joint and Coalition Warfighters. WTS provides essential field technical expertise, on-site risk analysis and execution planning to integrate emerging technologies and support the next generation of digitization across all 21st Century Battlefield Operating Systems. Inserts new technology (other services and commercial) into ATD/ACTDs promoting timely adaptation of emerging commercial products across the suite of existing systems to gain Information Dominance. Prepares essential documentation to achieve the technical evolution to a joint interoperable architecture and to achieve rapid acquisition for fielding systems to Force XXI. Proposes technically feasible joint experiments to submit to Joint C4ISR Battle Center (JBC) for operational testing. Performs technical coordination/integration activities to accelerate program enhancements through solutions to current user problems in the field by incorporating on-the-spot soldier input/feedback. Supports development of the operational architecture and implementation of new warfighter information technologies throughout the force structure..

Acquisition Strategy: The efforts funded in the project are non-system specific, therefore no acquisition strategy is provided.

FY 1997 Accomplishments: Project not funded in FY97

FY 1998 Planned Program:

- 1000 Conduct major design evaluations of Army systems for Joint Technical Architecture-Army (JTA-A) Interoperability Compliance
- 500 Ensure JTA-A Interoperability Implementation through IPT/Contract actions and assess the JTA-A compatibility of Army Science and Technology Programs
- 700 Assess JTA-A Interoperability for Army Systems
- 313 Technically influence the development and implementation of the JTA-A

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604805A Command, Control, Communications Systems - Engineering Development	D589	
FY 1998 Planned Program: (continued)			
• 374	Conduct joint interoperability experiments with the Joint C4ISR Battle Center and other services		
• 100	Interim Design Division (IDD) Planning Support		
• 76	Small Business Innovative Research/Small Business Technology Transfer Programs		
Total			3063
FY 1999 Planned Program:			
• 1350	Conduct Major design evaluations for Joint Technical Architecture-Army (JTA-A) Interoperability		
• 1362	Ensure JTA-A Interop Implementation and Assess JTA-A compatibility for Army and S&T Programs		
• 800	Assess JTA-A interop for Army Systems		
• 617	Technically influence the development/implementation of Joint Technical Architecture (JTA)		
• 432	Maintain existing JTA-A Information Technical Standards		
• 450	Investigate information technical standards for inclusion in JTA-A/JTA		
• 169	Technically influence commercial and international standards forums		
• 550	Conduct Joint Interoperability experiments with JBC and other services		
• 490	Plan and integrate for implementation of new technology initiatives		
• 317	Reengineer systems under evaluation per user feedback (i.e. In-Theater Injection to broadcast services) TF/DIV XXI		
Total			6537
B. Project Change Summary			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		0	3161
Adjustments to Appropriated Value		0	3161
FY 1999 President's Budget		0	-98
		0	3063
			6537
C. Other Program Funding Summary: None			
D. Schedule Profile			
		FY 1997	FY 1998
		1 2 3 4	1 2 3 4
TBD			

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development	0604805A Command, Control, Communications				D589
	Systems - Engineering Development				
A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999		
Government Engineering	0	1552	2521		
Contractual Engineering	0	1058	3387		
Technical Studies/Technology Evaluations	0	200	300		
Training	0	24	39		
Travel	0	153	290		
SBIR/STTR		76			
Total	0	3063	6537		
B. Budget Acquisition History and Planning Information: Not applicable					

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604807A Medical Materiel - Engineering Development									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		4570	4345	5338	7264	8011	9411	9905	Continuing	Continuing	
D812 Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development		185	0	284	2243	3041	3384	3275	Continuing	Continuing	
D832 Combat Medical Materiel-Engineering Development		1616	2274	2432	2389	2366	3373	3562	Continuing	Continuing	
D834 Soldier System Protection-Engineering Development		838	902	872	846	825	1028	1692	Continuing	Continuing	
D849 Infectious Disease Drug and Vaccine-Engineering Development		1931	1169	1750	1786	1779	1626	1376	Continuing	Continuing	

Mission Description and Budget Item Justification: This engineering and manufacturing development program funds: (1) improved medical equipment and drugs essential to counteracting lethal and human performance degrading effects of infectious diseases, and (2) medical equipment essential to meeting medical requirements on the integrated battlefield, with emphasis on decreased size/weight and high mobility, yet supporting large numbers of combat casualties. Additionally, foreign medical materiel may be procured for exploitation of advanced technology and development to meet Army medical defense goals. This program element supports the full-scale development of vaccines, prophylactic and therapeutic drugs, resuscitation fluids and drug products for Acquired Immune Deficiency Syndrome (AIDS). This program funds engineering and manufacturing development for both large and small Combat Casualty Care end items for location of casualty, diagnosis, rapid intensive care delivery, intensive care evacuation platforms, and rapidly mobile, lightweight surgical facilities and equipment. Additionally, the program element funds engineering and manufacturing development of medical equipment that provides protection against physiological, psychological or environmental factors that degrade physical performance. This includes engineering development of vision corrective devices for protective masks. This program is primarily managed by the U.S. Army Medical Research and Materiel Command. The projects in this program element support research efforts in the engineering and manufacturing development phase of the acquisition cycle and are therefore correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering

D812

Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D812 Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development	185	0	284	2243	3041	3384	3275	Continuing	Continuing

A. Mission Description and Justification: This project funds Congressionally mandated, militarily relevant HIV medical countermeasures. This provides for engineering and manufacturing development of sufficient candidate vaccines and drugs to permit large-scale field testing and education/training materials. Efforts are directed to answer militarily unique needs affecting manning, mobilization and deployment. The major contractor is Henry M. Jackson Foundation for the Advancement of Military Medicine, Rockville, MD.

Acquisition Strategy: Test and evaluate commercially developed vaccine candidates in government-managed trials.

FY 1997 Accomplishments:

- 92 Developed and prepared cohorts for a Phase III test of a vaccine to prevent infection with HIV.
 - 93 Began additional Phase I trials, began Phase II trials, and selected products to evaluate vaccine products.
- Total 185

FY 1998 Planned Program: Program not funded in FY 1998

FY 1999 Planned Program:

- 98 Develop cohorts for expanded Phase II trial.
 - 186 Begin Phase II trial for HIV vaccines.
- Total 284

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	189	0	306
Appropriated Value	189		
Adjustments to Appropriated Value	-4		
FY 1999 President's Budget	185	0	284

C. Other Program Funding Summary: Not applicable.

Project D812

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development	PROJECT D812
<p>D. <u>Schedule Profile:</u> Multiple medical developmental products will advance through the various events throughout the FY.</p>		
Project D812		Exhibit R-2 (PE 0604807A)

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering Development

D812

A. Project Cost Breakdown

Test & Evaluation	FY 1997	FY 1998	FY 1999
	185	0	284
Product Development	0	0	0
Project Management	0	0	0
Total	185	0	284

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
--	---	--------------------------	-------------------------	--------------------	------------------------	---------	---------	---------	--------------------	---------------

Product Development Organizations: None
 Support and Management Organizations

USAMMDA

Contracts

Test and Evaluation Organizations

Army Laboratories

Contracts

H.M. Jackson

C/Coop Agreement

Foundation

Government Furnished Property: None.

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project D812

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BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604807A Medical Materiel - Engineering Development								D832	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D832	Combat Medical Materiel-Engineering Development	1616	2274	2432	2389	2366	3373	3562	Continuing	Continuing	
<p>A. Mission Description and Justification: This project supports engineering and manufacturing development to field new and improved medical materiel essential for combat casualty care to reduce logistical support requirements and minimize loss from duty rates. The major contractor is the United Defense Limited Partnership, San Jose, CA.</p> <p>Acquisition Strategy: Test and evaluate commercially developed materiel for hardening or other modification in government managed trials.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 773 Conducted technical and user evaluations of Engineering Design Model of armored medical treatment vehicle prototype. 843 Supported the engineering development and user evaluations of telemedicine hardware and concepts for the treatment of combat casualties. Total 1616 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 23 Monitor industry development and technical testing of the portable field oxygen concentrator. 200 Conduct Patient Movement Item Testing at military testing laboratories. 984 Build Armored Medical Evacuation Vehicle (AMEV) mock-up. Finish final design of the Armored Medical treatment vehicle. Conduct production qualification testing. 233 Conduct nondevelopmental item (NDI) User Testing of Medical Equipment. 684 Conduct Limited User Assessment Testing of Life Support for Trauma and Transport. 83 Transition Hypertonic Saline Dextran to procurement. 10 Build Joint Special Operations Command Resuscitation Station. 57 Small Business Innovative Research/Small Business Technology Transfer Programs. Total 2274 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> 222 Complete development; conduct air worthiness certification testing of the portable field oxygen concentrator. 2210 Conduct initial operational test and evaluation (IOT&E) for the Armored Medical Treatment Vehicle; complete Milestone III. 476 Begin IOT&E of LSTAT. Total 2432 											

Project D832

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BUDGET ACTIVITY		DATE		PROJECT	
5 - Engineering and Manufacturing Development		February 1998		D832	
PE NUMBER AND TITLE		FY 1997		FY 1998	
0604807A Medical Materiel - Engineering Development		FY 1997		FY 1998	
B. Project Change Summary		FY 1997		FY 1998	
FY 1998/1999 President's Budget		1659	2346	2420	
Appropriated Value		1659	2346		
Adjustments to Appropriated Value		-43	-72		
FY 1999 President's Budget		1616	2274	2432	
C. Other Program Funding Summary: Not applicable.					
D. Schedule Profile: Multiple medical developmental products will advance through the various events throughout the FY.					
		FY 1997		FY 1998	
		1	2	3	4
Field Portable Oxygen Generation and Distribution System transition to procurement					
Hypertonic Saline Dextran MLST 3 Life Support Trauma and Transport System					
MLST 1					
MLST 2					
Armored Medical Treatment Vehicle					
MLST 1/2					
MLST 3					
Joint Special Operations Resuscitation Prototype					
Thawed Blood Processing System					
MLST 1					

Project D832

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

0604807A Medical Materiel - Engineering

D832

Project D832

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering

D834

Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D834 Soldier System Protection-Engineering Development	838	902	872	846	825	1028	1692	Continuing	Continuing

A. Mission Description and Justification: This project supports engineering development of preventive medicine materiel, including devices, pharmacologicals and other tools, to provide protection, sustainment, and enhancement of the physiological and psychological capabilities of soldiers in the face of combat operations under all environmental conditions. Focus is on reduction in the incidence of personnel losses due to preventable disease and nonbattle injuries through development of environmental and physiological performance monitors and other preventive medicine countermeasures. A major contractor is Stanford Research Institute, Palo Alto, CA.

Acquisition Strategy: Test and evaluate commercially developed materiel for hardening or other modification in government managed trials.

FY 1997 Accomplishments:

- 838 Supported the engineering development and user evaluation of telemedicine hardware and concepts for soldier protection.
- Total 838

FY 1998 Planned Program:

- 236 Begin user testing of Personnel Information Carrier (PIC).
- 236 Integrate Medical Situational Awareness and Control software into Combat Service Support Control System.
- 408 Integrate hand-held computer/communications system with medical and communications equipment for the Medical Detachment, Telemedicine equipment set.
- 22 Small Business Innovative Research/Small Business Technology Transfer Programs.
- Total 902

FY 1999 Planned Program:

- 872 Begin testing of Personnel Information Carrier necessary to obtain Food and Drug Administration (FDA) approval.
- Total 872

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
865	931	941
865	931	
-27	-29	
838	902	872

Project D834

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604807A Medical Materiel - Engineering Development	D834

C. Other Program Funding Summary Not applicable.

D. Schedule Profile Multiple medical developmental products will advance through the various events throughout the FY.

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering Development

D834

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999	
Test & Evaluation	44	870	662	
Product Development	790	0	0	
Project Management	4	32	210	
Total	838	902	872	

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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Product Development Organizations

Contracts					834	790	0	0	Cont	1624
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Support and Management Organizations

USAMMDA					20	4	32	47	Cont	103
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Contracts

Test and Evaluation Organizations:

Army Labs						0	0	163		163
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Government Furnished Property: None

Subtotal Product Development					834	790				1624
Subtotal Support and Management					20	4	32	210		266
Subtotal Test and Evaluation						44	870	662		1576
Total Project					854	838	902	872		3466

Project D834

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604807A Medical Materiel - Engineering Development								D849	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D849	Infectious Disease Drug and Vaccine-Engineering Development	1931	1169	1750	1786	1779	1626	1376	Continuing	Continuing	

A. Mission Description and Justification: This project funds engineering and manufacturing development of sufficient candidate medical countermeasures to permit large-scale field testing and complete studies required for Food and Drug Administration (FDA) licensure. Work performed in laboratories and among troop populations is directed to prevention, diagnosis, and treatment of viral, bacterial and parasitic diseases to prevent casualties, sustain operational performance and minimize deaths and disability of armed forces during military operations.

Acquisition Strategy: Test and evaluate in-house and commercially developed vaccine candidates in government-managed trials to meet FDA requirements.

FY 1997 Accomplishments:

- 859 Completed safety and efficacy testing of antimalarial drug Azithromycin.
- 526 Conducted Phase II efficacy study for *Campylobacter* vaccine.
- 546 Continued efficacy trial on Enterotoxigenic *Escherichia coli* (ETEC) vaccine.

Total 1931

FY 1998 Planned Program:

- 962 Continue trials required to accumulate data to support FDA regulatory filings for *Campylobacter* and ETEC vaccines.
- 177 Begin pivotal Phase III field trials to evaluate efficacy of antimalarial drugs WR238605.
- 30 Small Business Innovative Research/Small Business Technology Transfer Programs.

Total 1169

FY 1999 Planned Program:

- 572 Complete expanded field trials proving the efficacy of *Campylobacter* and ETEC vaccines.
- 664 Conduct expanded field trials to prove efficacy of *Shigella flexneri* and *Leishmania* skin test antigens.
- 514 Continue full-scale expanded Phase III field trials to evaluate efficacy of antimalarial drugs WR238605.

Total 1750

Project D849

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering Development

D849

B. Project Change Summary

FY 1997	FY 1998	FY 1999
1980	1206	1741
1980	1206	
-49	-37	
1931	1169	1750

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile Multiple medical developmental products will advance through the various events throughout the FY.

FY 1997	FY 1998	FY 1999
1 2 3	2 3	2 3 4
4	1	1
		4

ETEC MLST 3

Chikungunya Live Vaccine Special IPR

Cholera Whole Cell +B Subunit Vaccine

MS III

X

X

X

Project D849

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DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604807A Medical Materiel - Engineering Development

PROJECT
D849A. Project Cost Breakdown

Test & Evaluation	FY 1997	FY 1998	FY 1999
	1632	707	442
Product Development	0	0	0
Project Management	299	462	1308
Total	1931	1169	1750

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or Contract

Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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Product Development Organizations

Contracts

55	0	0	0	0	55
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Support and Management Organizations

USAMMDA

280	255	366	1000	1901
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Contracts

57	44	96	308	505
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Test and Evaluation Organizations

Army Laboratories

442	128	0	0	570
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WRAIR

1069	240	0	147	1456
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Contracts

0	354	30	147	531
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Navy Laboratories

190	910	677	148	1925
-----	-----	-----	-----	------

Government Furnished Property: None

Subtotal Product Development

55				55
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Subtotal Support and Management

337	299	462	442	1540
-----	-----	-----	-----	------

Subtotal Test and Evaluation

1701	1632	707	1308	5348
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Total Project

2093	1931	1169	1750	6943
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Project D849

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)							DATE	February 1998		
BUDGET ACTIVITY		PE NUMBER AND TITLE								
5 - Engineering and Manufacturing Development		0604808A Landmine Warfare/Barrier - Engineering Development								
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
COST (In Thousands)										
Total Program Element (PE) Cost		9342	13818	46905	48389	61163	38834	46883	Continuing	Continuing
D016 Mine Systems Engineering Development		7242	5500	20000	19000	18436	12198	22321	Continuing	Continuing
D415 Mine Neutralization/Detection		2100	8318	26905	29389	42727	26636	24562	Continuing	Continuing

Mission Description and Budget Item Justification: This program element provides for engineering and manufacturing development of mine and countermine systems. Project D016, Mine Systems Engineering Development, provides for the increased tactical effectiveness and responsiveness of landmines by supporting the development of a minefield command and control system for the Wide Area Munition (WAM), the Intelligent Combat Outpost (Raptor), the Area Denial Artillery Munition (ADAM)/Remote Anti-Armor Mine (RAAM) Upgrade, and Non-Self-Destructing Anti-Personnel Landmine Alternatives (NSD-A). Project D415, Mine Neutralization/Detection Engineering Development, is the engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Explosive Standoff Minefield Breacher (ESMB), and Handheld Stand-off Minefield Detection System (HSTAMIDS). It provides a group of mutually supported mine detection and neutralization devices to counter a variety of threat mines, minefields and obstacles necessary for implementing the Army's Countermine Modernization Plan. This program element supports Engineering and Manufacturing Development (EMD) and is, therefore, appropriately placed in Budget Activity 5.

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604808A Landmine Warfare/Barrier - Engineering

D016

Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D016 Mine Systems Engineering Development	7242	5500	20000	19000	18436	12198	22321	Continuing	Continuing

A. Mission Description and Justification: Provides for engineering and manufacturing development of new smart munitions and intelligent/autonomous coordination of there use for increased effectiveness. Also addresses Presidential directive to eliminate reliance on the use of Anti-Personnel Landmines.

Acquisition Strategy: A command and control capability is being developed as a product improvement to Wide Area Munition (WAM) and will be incorporated into the WAM product improvement program. For Raptor, decision to go sole source or competitive will be based on evaluation of sole source PDRR contractor results. For NSD-A, 12 solicitation respondents will be requested to submit proposals for their alternative concept. CPIF contracts for two of the best concepts will be awarded for the Early User Experiment (EUE) phase. At the conclusion of the EUE one contractor will be selected to continue into the EMD and Production phases. For ADAM/RAAM ARDEC (In-house) will lead the design and development effort. A government owned Load, Assemble, and Pack (LAP) facility will develop processes and tooling for the download of ADAM and RAAM and the creation of the hybrid projectile

FY 1997 Accomplishments:

- 1950 Completed Receiver/Transmitter critical circuit design
- 784 Completed ASIC design through simulation
- 910 Built brassboard Receiver/Transmitter
- 1598 Completed Control Station Interface specification
- 2000 Pending ADAM/RAAM reprogramming
- Total 7242

FY 1998 Planned Program:

- 4800 Conduct ADAM/RAAM hybrid design development
- 500 Conduct ADAM/RAAM process prove-out testing
- 200 Initiate ADAM/RAAM Technical Test planning
- Total 5500

Project D016

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT
D016

FY 1999 Planned Program:

- 4000 Complete NSD-A Early User Experiments
- 8500 Complete NSD-A final design and integration of components
- 3500 Complete ADAM/RAAM Technical Testing
- 3300 Fabricate ADAM/RAAM Technical Test Hardware
- 700 Prepare Milestone Documentation and Type Classify ADAM/RAAM
- Total 20000

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	5384	0	3600
Appropriated Value	5499		
Adjustment to appropriated value	1743		
FY 1999 President's Budget	7242	5500	20000

Change Summary Explanation:

Funding: FY97 Increase of 1743 is a below threshold reprogramming for ADAM/RAAM efforts.
FY98 and FY99 increases of 5500 and 16400 respectively are for NSD-A and ADAM/RAAM efforts.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 4									
PE 0603619A, Project D005, Landmine Adv Dev		9650	3946	3877					17473

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	
Completed WAM C2 Circuit Design	1	2	3					
Completed WAM ASIC Design		4	1	3	4	2	3	
Completed Radio Brass board Design		X*						
ADAM/RAAM MS II		X*						
ADAM RAAM MS III			X					X

*Denotes completed milestone

Project D016

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604808A Landmine Warfare/Barrier - Engineering Development

D016

	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown			
Hardware Development	5417	4000	16100
Test & Evaluation	375	400	1300
Government Engineering & Support	1075	800	2300
Government Program Support	375	300	300
Total	7242	5500	20000

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Prog
Product Development Organizations										
TBD	TBD	TBD	TBD	TBD	0	0	4000	16100	Cont	20100
Textron Systems	CPIF	June 1990	22317	22317	18750	3567			Cont	22317
Misc.	Various	Various				1850				1850
Support and Management Organizations										
ARDEC	Various	Various				671	800	2300	Cont	3771
PM-MCD	Various	Various				375	300	300	Cont	975
Misc.	Various	Various				404			Cont	404
Test and Evaluation Organizations										
TECOM	Various	Various				375	400	1300	Cont	2075
Government Furnished Property: None										
Subtotal Product Development					18750	5417	4000	16100		44267
Subtotal Support and Management						1450	1100	2600		5150
Subtotal Test and Evaluation						375	400	1300		2075
Total Project					18750	7242	5500	20000		51492

Project D016

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
5 - Engineering and Manufacturing Development		0604808A Landmine Warfare/Barrier - Engineering Development		D415					
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D415 Mine Neutralization/Detection	2100	8318	26905	29389	42727	26636	24562	Continuing	Continuing
<p>A. Mission Description and Justification: This project provides engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Explosive Standoff Minefield Breacher (ESMB), Handheld Stand-off Mine Detection System (HSTAMIDS), and Ground Standoff Mine Detection System (GSTAMIDS). It provides a group of mutually supported mine detection and neutralization devices to counter a variety of threat mines, minefields and obstacles necessary for implementing the Army's Countermine Modernization Plan.</p> <p>Acquisition Strategy: ASTAMIDS, HSTAMIDS, and GSTAMIDS - competing contractors (2 for each project) competitively selected for PDRR phase competition which will lead to a down select for the EMD phase. Successful EMD contractor will be awarded initial production contract (sole source) with multiple option year buys. ESMB competitively selected PDRR phase contractor will be awarded a sole source EMD contract upon completion of PDRR phase and MDA approval. Sole source Production contract with multiple options is anticipated for successful EMD contractor.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 507 Prepared EMD solicitation package and MSII Documentation for ATAMIDS. • 1198 Procured IVMMMD prototype • 395 Conducted IVMMMD Test and Evaluation Total 2100 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 4000 Award EMD contract and initiate preliminary EMD design for ESMB • 2400 Initiate Procurement of ESMB Long lead Test hardware • 1709 Initiate Development of ESMB Manufacturing Processes • 209 Small Business Innovative Research/Small Business Technology Transfer Programs Total 8318 									

Project D415

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PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604808A Landmine Warfare/Barrier - Engineering Development

D415

FY 1999 Planned Program:

- 5000 Continue ESMB EMD design effort
- 7372 Fabricate ESMB hardware and initiate contractor/Government testing.
- 2512 Continue Development of ESMB Manufacturing Processes
- 7315 Conduct HSTAMIDS source selection and develop EMD design.
- 806 Procure HSTAMIDS long lead test hardware.
- 3900 Complete GSTAMIDS Hardware Fabrication and Conduct Contractor Testing
- Total 26905

B. Project Change Summary

FY 978/99 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 99 President's Budget

FY 1997

2172

2232

-132

2100

FY 1998

22605

8732

-414

8318

FY 1999

40533

26905

Change Summary Explanation:

Funding: FY98 decrease of 13873 due to realignment of ASTAMIDS funding to 0603606A/project D608 by Congress.

FY99 decrease of \$13M due to realignment of ASTAMIDS funding to 0603606A/project D608 by Congress.

Schedule: Congress delayed start of ASTAMIDS EMD phase from FY98 to FY01

C. Other Program Funding Summary

RDTE, A Budget Activity 4

PE 0603619A, Project D606, Countermine/Barrier

Advanced Development

OPA 3, A Appropriation

M80100, IVMMMD

E80300, ESMB

AMMO, A Appropriation

E81400, ESMB

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
	27164	14649	2832	0	6546	7628	8504	Cont	Cont
	12281		3775	0		432	440		16056
					290	6642	6589	Cont	Cont
					2990				

Project D415

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604808A Landmine Warfare/Barrier - Engineering

PROJECT

D415

D. Schedule Profile

D. Schedule Profile

Conduct MS II for ESMB

Conduct MS II for HSTAMIDS

Award HSTAMIDS EMD Contract

GSTAMIDS MS II

*Denotes completed milestone

	FY 1997	
1	2	3
		X*

FY 1997	4	1
2	3	

FY 1998

4

FY 1999

4

Project D415

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604808A Landmine Warfare/Barrier - Engineering

D415

Development

	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown			
Primary Hardware Development	1198	6006	22118
Test and Evaluation		330	640
Government Engineering and Support	507	1637	3258
Government Program Management	395	136	889
SBIR/STTR		209	
Total	2100	8318	26905

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Prog
Product Development Organizations										
Tracor Aerospace	CPIF	TBD	TBD	TBD	0	0	6206	12419	Cont	18625
LNy Inc.	FFP	June 97	1198	1198	1198	1198			Cont	1198
TBD	TBD	TBD	TBD	TBD	0	0	0	9699	Cont	9699
Support and Management Organizations										
NVESD/CECOM	Various	Various	507		779	2800	Cont	4086	Cont	538
ARDEC	Various	Various	395		465	1347	Cont	2207	Cont	538
Misc.	Various	Various								
Test and Evaluation Organizations										
TECOM	Various	Various			330	640	Cont	970	Cont	970
Government Furnished Property: None										
Subtotal Product Development			1198		6206	22118		29522		29522
Subtotal Support and Management			902		1782	4147		6831		6831
Subtotal Test and Evaluation			2100		330	640		970		970
Total Project					8318	26905		37323		37323

Project D415

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604814A Sense and Destroy Armor Munition - Engineering Development									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	9677	10847	20813	12873	1960	0	0	0	992979	
D2ST	SADARM Operational Test	292	5032	0	0	0	0	0	0	5324	
D644	Generic SADARM Engineering Development	9385	5815	20813	12873	1960	0	0	0	987655	

Mission Description and Budget Item Justification: Sense and Destroy Armor (SADARM) munitions will provide an enhanced fire/counterfire capability for 155mm howitzer delivery systems. SADARM can attack targets well beyond the Forward Line of Troops (FLOT) in a fire-and-forget mode. SADARM can be used in day and night, inclement weather and degraded battlefield conditions.

These capabilities will be enhanced by the SADARM Product Improvement (PI) program which began in FY 1997. The PI SADARM submunition will have an enlarged footprint (permitting each submunition to cover approximately three times the area of the baseline SADARM), improved infrared sensor to see targets at higher altitudes, and a combined effects (multi-frag) warhead permitting it to kill more targets. As a result, the PI SADARM will be more effective against its primary target (self-propelled howitzers) and secondary targets (light and heavy missile launchers, surface-to-air missile sites, air defense units, surface-to-surface missiles and towed howitzers). When ejected from the 155mm projectile, the PI SADARM submunitions deploy and descend toward the ground at a constant velocity and spin rate. The submunitions contain an improved sensing mechanism which combines a dual-mode millimeter wave sensor with an improved infrared sensor array. If a target is present within the scan area (approximately 53,000 square meters or 12 football fields), the submunition detects and destroys the target with the new combined effects warhead.

The projects within this Program Element support research efforts in the engineering and manufacturing development phase of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604814A Sense and Destroy Armor Munition -

D2ST

Engineering Development

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2ST SADARM Operational Test	292	5032	0	0	0	0	0	0	5324

A. Mission Description and Justification: This project finances the direct costs of planning and conducting operational test and evaluation of the Sense and Destroy Armor (SADARM) munitions by the Operational Test and Evaluation Command (OTPEC). SADARM is an Acquisition Category (ACAT) IC system with an Initial Operational Test and Evaluation (IOTE) in FY 1998. Operational testing is conducted under conditions that approximate, as closely as possible, those encountered in actual combat with typical user troops trained to employ the system. OTPEC provides Army leadership with an independent test and evaluation of effectiveness and suitability of the system. Project D2ST was restructured from SSN E66300, Projectile, Artillery, 155mm SADARM, M898, Procurement Ammunition, Army.

FY 1997 Accomplishments:

- 292 Conducted planning and preparation for test during the 4Q FY 1998 IOTE.
- Total 292

FY 1998 Planned Program:

- 4906 IOTE 4Q FY 1998
- 126 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 5032

FY 1999 Planned Program: Project not funded in FY 1999**B. Project Change Summary**

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	300	5494	0
Appropriated Value	309	5494	
Adjustments to Appropriated Value	-17	-462	
FY 1999 President's Budget	292	5032	0

Change Summary Explanation: Funding: FY 1998 - Undistributed congressional reductions (-462).

C. Other Program Funding Summary: None

Project D2ST

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604814A Sense and Destroy Armor Munition - Engineering Development	D2ST	
D. <u>Schedule Profile</u>			
Initiate preparation for 4Q FY 1998 IOTE	1	FY 1997 2 3	FY 1998 2 3
IOTE	X*	4 1	4 3 4
			X
Project D2ST			
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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604814A Sense and Destroy Armor Munition -
Engineering Development

D2ST

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	292	4906	0
SBIR/STTR		126	
Total	292	5032	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Contract

Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations										
OPTEC, Alex, VA										
SBIR/STTR										
					0	292	4906 126		0	5198 126
Government Furnished Property: None										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project										
						292	5032			5324
						292	5032			5324

Project D2ST

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604814A Sense and Destroy Armor Munition - Engineering Development								D644	
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D644	Generic SADARM Engineering Development	9385	5815	20813	12873	1960	0	0	0	987655	
<p>A. Mission Description and Justification: Sense and Destroy Armor (SADARM)</p> <p>Acquisition Strategy - R&D: The cost plus incentive fee (CPIF) contracts were awarded in FY 1986 to Aerojet ElectroSystems and Honeywell. In FY 1991, a design select eliminated the Honeywell competition. Aerojet then selected Honeywell (now Alliant Techsystems) as their prime sub-contractor and they have continued this relationship into production. The Engineering and Manufacturing Development contract with Aerojet has been completed. A contract was awarded in the 2QTR FY 1997 for a product improvement to the basic SADARM. This effort will focus on expanding the lethal search area of the submunition and improving its ability to kill targets.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> • 640 Hardware in-the-loop support provided • 1750 Initial/design planning for combined effects warhead completed • 4000 Trade studies and test for electronics sensor/software performed • 850 Test hardware • 2145 Government support and development of initial test criteria/schedules/plans provided Total 9385 <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 100 Hardware in-the-loop support • 1500 Design of the combined effects warhead • 2320 Electronic sensor software development • 680 Test hardware • 1069 Government support to development • 146 Small Business Innovative Research/Small Business Technology Transfer Programs Total 5815 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 750 Hardware in-the-loop support • 3400 Design of the combined effects warhead 											

Project D644

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February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

**0604814A Sense and Destroy Armor Munition -
Engineering Development**

FY 1999 Planned Program: (continued)

- | | | |
|---|--|-------|
| • | Electronic sensor software development | 8800 |
| • | Test hardware | 4000 |
| • | Government support to development | 3863 |
| | Total | 20813 |

B. Project Change Summary

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	9634	16878	20813
Appropriated Value	9840	6000	
Adjustments to Appropriated Value	-455	-185	
FY 1999 President's Budget	9385	5815	20813

Change Summary Explanation: Funding: FY 1998 – Undistributed congressional reductions (-185).

C. Other Program Funding Summary

Procurement, Ammunition, Army, SSN E66300
Proj, Arty, 155mm SADARM, M898
LRIP Quantities

D. Schedule Profile

Award second LRP contract
Conduct Initial Production Test (IPT)
Award Product Improvement Contract
ASARC III

ASARC III

PI SADARM Captive Flight Test

NOTE: 40 FY 1998

MSIII: 10 FY 1999

Award Full Scale Prod: 2Q FY 1999

FUE: 10 FY 1999

* Denotes completed milestone

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998	PROJECT
BUDGET ACTIVITY					PE NUMBER AND TITLE		D644
5 - Engineering and Manufacturing Development					0604814A Sense and Destroy Armor Munition - Engineering Development		
A. Project Cost Breakdown					FY 1997	FY 1998	FY 1999
Contractor Engineering Support					7240	4500	16950
Government Engineering Support					1745	819	2702
Program Management Support					250	250	250
Developmental Test and Evaluation					150	100	911
SBIR/STTR						146	
Total					9385	5815	20813
B. Budget Acquisition History and Planning Information							
Performing Organizations							
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998
Activity			EAC	EAC	FY 1997	FY 1998	FY 1999
Product Development Organizations							
Prod Improv:-	SS/CPAF	FEB 97	TBD	48800	0	6600	4500
Aerojet- Azusa, CA							16200
							11048
							38348
Support and Management Organizations							
Aerojet-Azusa, CA	C/CPIF	SEP 86	436202	442460	436202		0
ARDEC-Picatinny					60468		800
Alliant Tech Sys	C/CPIF	SEP 86	TBD	188714	188038	0	750
Hopkins, MN							0
Loral Vought Sys	SS/CPIF	SEP 88	TBD	90535	90535	0	0
Dallas, TX							0
Miscellaneous	Multiple	Multiple			7645	0	0
Support and Management Organizations							
PM SADARM							0
Picatinny Arsenal					13875	250	350
PMO-MLRS,					16266	2202	2268
Huntsville, AL							0
Miscellaneous					8868		0
							8868

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT
D644

5 - Engineering and Manufacturing Development

0604814A Sense and Destroy Armor Munition -
Engineering Development

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
SBIR/STTR							146			146
Test and Evaluation Organizations										
YPG, Yuma, AZ					21117	40	0	911	367	22435
WSMR					26487				0	26487
New Mexico										
Miscellaneous					67308	110	100	500	0	68018
Government Furnished Property: None										
Subtotal Product Development					782888	7240	4600	16950	11848	823526
Subtotal Support and Management					39009	1995	1115	2452	2618	47189
Subtotal Test and Evaluation					114912	150	100	1411	367	116940
Total Project					936809	9385	5815	20813	14833	987655

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604816A Longbow

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	10762	0	0	0	0	0	0	0	575173
DC31 Longbow - Apache	4775	0	0	0	0	0	0	0	555999
DC87 Longbow - Apache TESS	5987	0	0	0	0	0	0	0	19174

Mission Description and Budget Item Justification: Longbow will provide the AH-64 with a fire-and-forget Hellfire capability, greatly increasing weapon system effectiveness and aircraft survivability. The weapon system will be employable by day or night, in adverse weather, and in countermeasures environments. Project DC31 includes the efforts necessary to synchronize the integration of the Fire Control Radar (FCR) and the Radio Frequency (RF) missile onto the Apache aircraft. It includes two versions of the Longbow Apache AH-64D series aircraft: (1) the AH-64D with the FCR mission kit plus the upgraded 701C engine, and (2) the AH-64D without the FCR mission kit and engine upgrade. Funds were added to Project DC31 in FY97 for Second Generation Forward Looking Infrared (FLIR). Project DC87 provides funding for the Longbow Apache Tactical Engagement Simulation System (TESS). The TESS will perform RF missile simulations in addition to the functions of the Multiple Integrated Laser Engagement System/Air-to-Ground Engagement System for force-on-force collective training after fielding. Project DC87 also includes follow-on development of the Longbow Crew Trainer. The projects in this Program Element support research efforts started in the engineering and manufacturing development phase of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604816A Longbow

DC31

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC31 Longbow - Apache	4775	0	0	0	0	0	0	0	555999

A. Mission Description and Justification The Longbow program encompasses modifications to the AH-64 Apache as well as upgrades to the aircraft systems for the AH-64D series to efficiently and effectively integrate the FCR and RF missile. The system provides an adverse weather fire-and-forget missile capability that increases the AH-64 lethality and survivability. The Longbow Apache also retains the capability to fire the Semi-Active Laser Hellfire. The greatly improved design increases the operational capability of the crew and provides increased lethality and survivability, while complying with Congressional direction to standardize the fleet to a common configuration. The Second Generation FLIR will significantly enhance the night vision capabilities of the Apache. This improvement will maximize the probability of hit/kill, while minimizing the potential for fratricide.

Acquisition Strategy: The acquisition strategy involved a sole source contract during the Engineering and Manufacturing Development phase leading to a production contract in FY 96. The Second Generation FLIR demonstration effort was sole sourced to Lockheed Martin in FY97.

FY 1997 Accomplishments:

- 4775 Second Generation FLIR (Forward Looking Infrared) Development; Flight Demonstration
- Total 4775

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 Pres Bud Request

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
4895	0	0
4775		
4775	0	0

C. Other Program Funding Summary

Aircraft Procurement, Army (AA6607)*

*Includes procurement funding for TESS (shown in Project DC87) and for spares and advanced procurement.

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Total</u>
304969	404212	519636	623894	604283	622054	684490	<u>Cost</u>
							<u>Cont</u>

Project DC31

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			DC31		
5 - Engineering and Manufacturing Development		0604816A Longbow					
A. Project Cost Breakdown		FY 1997	FY 1998	FY 1999			
Contractor Engineering and Development		4775					
Total		4775	0	0			
B. Budget Acquisition History and Planning Information							
Performing Organizations							
Contractor or Government	Contract Method/Type	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998
Performing Activity	Vehicle			EAC			
Product Development Organizations							
McDonnell	CPIF	Aug 89		461329	461329		
Douglas Helicopter Systems (Airframe Modifications)							
Lockheed Martin	Basic	Sep 96		3889			
ORT Handgrip	Ordering						
Modifications	Agreement						
Longbow Limited Liability Corp				1236	1236		
BPIs							
Lockheed Martin	Basic			4775	0	4775	
Second Generation	Ordering						
FLIR	Agreement						
Support and Management Organizations							
Govt. Prog. Mgmt.	Varies	Quarterly			73753	0	73753
PATS Contractors	Varies	Quarterly			6903	0	6903
Test and Evaluation Organizations							
Test Activities	Varies	Quarterly			4114	0	4114
Government Furnished Property Not applicable							
Project DC31							
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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT																																			
BUDGET ACTIVITY		PE NUMBER AND TITLE																																						
5 - Engineering and Manufacturing Development		0604816A Longbow		February 1998	DC31																																			
<table border="0"> <thead> <tr> <th></th> <th>Total Prior to FY 1997</th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>Budget to Complete</th> <th>Total Program</th> </tr> </thead> <tbody> <tr> <td>Subtotal Product Development</td> <td>466454</td> <td>4775</td> <td></td> <td></td> <td></td> <td>471229</td> </tr> <tr> <td>Subtotal Support and Management</td> <td>80656</td> <td></td> <td></td> <td></td> <td></td> <td>80656</td> </tr> <tr> <td>Subtotal Test and Evaluation</td> <td>4114</td> <td></td> <td></td> <td></td> <td></td> <td>4114</td> </tr> <tr> <td>Total Project</td> <td>551224</td> <td>4775</td> <td>0</td> <td>0</td> <td></td> <td>555999</td> </tr> </tbody> </table>							Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	Subtotal Product Development	466454	4775				471229	Subtotal Support and Management	80656					80656	Subtotal Test and Evaluation	4114					4114	Total Project	551224	4775	0	0		555999
	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program																																		
Subtotal Product Development	466454	4775				471229																																		
Subtotal Support and Management	80656					80656																																		
Subtotal Test and Evaluation	4114					4114																																		
Total Project	551224	4775	0	0		555999																																		

Project DC31

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604816A Longbow

DC87

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC87 Longbow - Apache TESS	5987	0	0	0	0	0	0	0	19174

A. Mission Description and Justification: The Tactical Engagement Simulation System (TESS) will perform RF missile simulations in addition to the functions of the Multiple Integrated Laser Engagement System/Air-to-Ground Engagement System for force-on-force collective training after fielding. Project DC87 also includes follow-on development of the Longbow Crew Trainer. The TESS consists of an "A" kit and a "B" kit.

Acquisition Strategy: The Apache Attack Helicopter Project Manager's Office will contract with McDonnell Douglas Helicopter Systems to do the provisioning for the "A" kit that consists of on-board software for data interface operator control software, wiring, and power source taps for the "B" kit.

FY 1997 Accomplishments:

- 4830 Complete integration of the TESS "A" and "B" kits
 - 1157 Complete integration and upgrade of the Combat Training Centers interface.
- Total 5987

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 Pres Bud Request

FY 1997	FY 1998	FY 1999
5749	0	0
5872		
115		
5987	0	0

C. Other Program Funding Summary

Longbow Apache TESS (AA6607)*

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total To Compl
0	3435	3599	8000	8000	8000	0	39034

*This procurement funding represents only the portion of this line to be used for the TESS effort. The total procurement line (AA6607) includes additional funding for all other Longbow Apache efforts.

Project DC87

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604816A Longbow								DC87	
D. Schedule Profile		FY 1997				FY 1998				FY 1999	
		1	2	3	4	1	2	3	4		
Continue TESS "A" & "B" kits integration											
Complete TESS "A" & "B" kits integration			X								
										X	

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604816A Longbow

DC87

A. Project Cost Breakdown

FY 1997 FY 1998 FY 1999

Contractor Engineering and Development

5339

In House support

648

Total

5987

Budget to

Complete

FY 1999

FY 1998

FY 1997

FY 1999

FY 1997

FY 1998

FY 1999

FY 1997

FY 1998

FY 1999

FY 1997

FY 1998

FY 1999

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or

Government

Performing

Activity

Method/Type

Award or

Obligation

Date

Vehicle

Performing

Activity

EAC

EAC

EAC

EAC

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Exhibit R-3 (PE 0604816A)

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		DC87		
5 - Engineering and Manufacturing Development		0604816A Longbow				
		Total				
		Prior to				
		FY 1997	FY 1997	FY 1998	FY 1999	Budget to
		11727	5159			Complete
		1460	507			0
			321			0
		13187	5987	0	0	0
						Total
						Program
						16886
						1967
						321
						19174
Subtotal Product Development						
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project						
Project DC87		Page 9 of 9 Pages		Exhibit R-3 (PE 0604816A)		

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604817A Combat Identification - Engineering & Manufacturing Development									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	16889	19026	13471	7032	2010	0	0	0	137209	
D482	Ground Combat Identification EMD	13228	14170	7905	7032	2010	0	0	0	123126	
D901	All Service Combat ID Evaluation Team	2761	2910	0	0	0	0	0	0	5671	
D902	Dismounted Soldier CID	900	1946	5566	0	0	0	0	0	8412	

Mission Description and Budget Item Justification: The world situation and modern warfare are evolving in a manner that dictates making reliable identification of friends, foes, and neutrals an absolute necessity, but increasingly difficult to achieve. The ability of weapons systems to engage targets at ranges longer than the capability to positively identify them significantly increases the potential for fratricide. This program is directed toward the design and development of distinct technology devices to help minimize this battlefield deficiency. The projects within this program are in the Engineering and Manufacturing Development (EMD) phase and the program element is correctly assigned in Budget Activity 5. Project D482 addresses the ground-to-ground vehicle mounted mission area; Project D901 addresses improvement of tactics, techniques and procedures across all mission areas; and Project D902 addresses the ground-to-ground dismounted mission area.

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Exhibit R-2 (PE 0604817A)

Mission Description and Budget Item Justification: The world situation and modern warfare are evolving in a manner that dictates making reliable identification of friends, foes, and neutrals an absolute necessity, but increasingly difficult to achieve. The ability of weapons systems to engage targets at ranges longer than the capability to positively identify them significantly increases the potential for fratricide. This program is directed toward the design and development of distinct technology devices to help minimize this battlefield deficiency. The projects within this program are in the Engineering and Manufacturing Development (EMD) phase and the program element is correctly assigned in Budget Activity 5. Project D482 addresses the ground-to-ground vehicle mounted mission area; Project D901 addresses improvement of tactics, techniques and procedures across all mission areas; and Project D902 addresses the ground-to-ground dismounted mission area.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604817A Combat Identification - Engineering & Manufacturing Development								D482	
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D482	Ground Combat Identification EMD	13228	14170	7905	7032	2010	0	0	0	123126	

A. Mission Description and Justification: The Battlefield Combat Identification System (BCIS) is an all weather, day/night, millimeter wave, Low Probability of Intercept/Low Probability of Detection (LPI/LPD), digitally encrypted question and answer system that provides positive identification of friendly platforms out to 5.5 km (clear weather). BCIS was developed to minimize fratricide while maximizing combat effectiveness given rapidly changing and intense tactical situations. BCIS provides positive identification of friendly platforms to aid the gunner or commander to make a rapid shoot/don't shoot decision at the point of engagement. BCIS also provides short range (out to 1 km, in clear weather), LPI/LPD situational awareness messages at the platoon level. Any situational awareness data received by BCIS will be sent through the platform Applique for integration with other position sources to form the full situational awareness database.

Acquisition Strategy: A competitive, cost plus award fee contract, for 46 EMD units and option quantities, was awarded Aug 93. An additional 65 units were procured for participation in TF XXI AWE and the Combat ID International Demonstration. This contract has been modified to include follow-on producibility engineering and test efforts for a Low Cost Design for the BCIS, Production Qualification Test (PQT), and Initial Operational Testing (IOT) that will lead to a Milestone III decision in 4Q 99.

FY 1997 Accomplishments:

- 3185 Provided technical, integration, training and maintenance support for TF XXI experiment.
- 2372 Completed Producibility Engineering (PE) study and design effort.
- 5171 Initiated fabrication, assembly and test of four Low Cost Producibility models.
- 2500 Develop/update system software for Low Cost Producibility models.
- Total 13228

FY 1998 Planned Program:

- 2659 Initiate development, design, and fabrication of installation kits (A kit) for the Abrams (M1A1)/Bradley (M2 ODS) for IOT.
- 2005 Complete fabrication, assembly and test of four PE models.
- 530 Conduct US/French Interoperability Testing.
- 8640 Initiate fabrication, assembly and test of Initial Operational Test (IOT) hardware (B kit.)
- 336 Small Business Innovative Research/Small Business Technology Transfer Programs.
- Total 14170

Project D482

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering &
Manufacturing Development

D482

FY 1999 Planned Program:

- 500 Initiate kit design, development and fabrication effort for remaining vehicles types (approx 30).
- 2978 Complete fabrication, assembly and test of IOT hardware (B kit).
- 1350 Conduct government PQT.
- 3077 Complete development, design, and fabrication of installation kits (A kit) for the Abrams/Bradley (M1A1/M2 ODS) vehicles.)
- 0 Continue dev, design and fab of installation kits for the Abrams/Bradley (M1A2, M2A2 SEP, M2A3) digitized vehicles.
- Total 7905

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997
13575
13255
-27
13228FY 1998
14773
14733
-603
14170FY 1999
7867
7905

C. Other Program Funding Summary: Work in this program element is related to and fully coordinated with efforts in PE 0602120 (Battlefield Ground Combat Identification Technology) and PE 0603772 (Ground Combat Identification Demonstration).

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 2, PE 0602120A	3520	3364	3570	3475	3641	3744	3861	0	25175
Proj AH15 Ground Combat Identification Tech									
RDTE, A, Budget Activity 3, PE 0603772A	7304	2962	0	0	0	0	0	0	10266
Proj D281 Ground Combat ID Demo									
RDTE, A Budget Activity 5, PE 0604817A	900	1946	5566	0	0	0	0	0	8412
Proj D902, Dismounted Soldier CID									
OPA2, SSN BA0515 Combat Identification	0	0	0	9681	11338	14019	13887	93857	142782
OPA2, SSN BA0510 Combat Identification Prog	0	0	4890	14550	27156	28422	13599		88617

D. Schedule Profile

	FY 1997	FY 1998	FY 1999
Provide tech, integ, trng/maint for TF XXI	1	2	3
Complete PE design effort	X*	X*	X*
Initiate fab, assy, test four PE models	X*	X*	X*

Project D482

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering &
Manufacturing Development

D482

D. Schedule Profile

FY 1997

FY 1998

FY 1999

1

2

3

4

1

2

3

4

X*

X*

X

X

X

X

X

X

X

X

X

Develop/update system software for PE models

Init dev, des & fab of Bradley kits (M2)

Init dev, des & fab of Abrams kits (M1)

Complete fab/assy of four PE models

Conduct US/French Interoperability Test

Initiate fab/assy/test of IOT hardware

Initiate kit des/dev effort for remaining veh

Comp1 Abrams/Bradley kit dev (M1A1/M2

ODS)

Complete fab/assy/test of IOT hardware

Conduct PQT

Conduct IOT&E

MS III decision

* Denotes Milestones completed

Project D482

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Exhibit R-2 (PE 0604817A)

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development		0604817A Combat Identification - Engineering & Manufacturing Development				
A. Project Cost Breakdown						
Primary Hardware Development	FY 1997	FY 1998	FY 1999			
Platform Integration	10956	10203	3340			
System Engineering/Program Management Support	313	2446	2438			
Government	693	478	389			
Contractor	439	310	139			
Program Management Personnel	827	397	249			
Development Test and Evaluation			1350			
SBIR/STTR		336				
Total	13228	14170	7905			
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	
				EAC	FY 1997	FY 1998
Product Development Organizations						
TRW	C/CPAF	12 Aug 93	67813	67813	43314	10956
GDLS	MIPR	29 Apr 94	11891	11891	8215	130
United Defense	MIPR	18 Jan 94	2666	2666	1683	183
Misc	MIPR		1993	1993	1493	
Support and Management Organizations						
Proj Management	Multiple		9933	9933		
CECOM	MIPR		6556	6556		
Test and Evaluation Organizations						
TECOM	MIPR		1850	1850		
TEXCOM	MIPR	15 Oct 95	673	673		
ASCIET	MIPR	2Q 96	3973	3973		
Government Furnished Property: Not Applicable						
					FY 1999	Budget to Complete
						Total Program
					3340	67813
					1938	11929
					500	2666
						1993
					388	12294
					389	8116
					1350	3200
						673
						3973

Project D482

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT	
5 - Engineering and Manufacturing Development	0604817A Combat Identification - Engineering & Manufacturing Development			D482	
	Total				
	Prior to			Budget to	Total
	FY 1997	FY 1997	FY 1998	Complete	Program
Subtotal Product Development	54705	11269	12649	5778	84401
Subtotal Support and Management	16489	1959	1185	777	20410
Subtotal Test and Evaluation	6496			1350	7846
SBIR/STTR			336		336
Total Project	77690	13228	14170	7905	112993
Project D482					
				Exhibit R-3 (PE 0604817A)	
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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604817A Combat Identification - Engineering & Manufacturing Development								D901	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D901	All Service Combat ID Evaluation Team	2761	2910	0	0	0	0	0	0	5671	
<p>A. Mission Description and Justification: All Service Combat Identification Evaluation Team (ASCIET) Support. ASCIET is an expanded effort aimed at fostering improved tactics, techniques, and procedures (TTP) across all combat identification mission areas. The Army, Navy, Air Force and Marine Corps are designated as the participating Services with the Air Force designated as the lead Service. ASCIET is chartered to employ the equipment and personnel of all Services to evaluate, investigate and assess various concepts of combat identification on the battlefield. ASCIET will also offer Federally Funded Research and Development Centers (FFRDCs), Service Battle Laboratories, and industry the opportunity to review and evaluate emerging technologies in multi-Service environment on a noninterference basis as a risk reduction and verification. ASCIET began in FY 95 as an effort to evaluate and revise joint TTP using current and new combat ID systems and technologies in a field environment. ASCIET was previously funded through Project D482. Restructuring was required because ASCIET is an independent effort from the BCIS EMD work.</p> <p>Acquisition Strategy: Not applicable</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 1519 Demonstrated A-G target identification capability for rotary wing (AH-1W) Cobra helicopter. 818 Demonstrated direct target ID capability for fixed wing (AV-8B). 424 Demonstrated automated "nine line" message generation utilizing Automatic Target Hand-off System (ATHS) II data link to locate and identify targets for fixed wing aircraft. <p>Total 2761</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 750 Assess joint C3I interoperability. 750 Assess surface-air and air-air CI capabilities in joint environment. 1337 Evaluate surface-air, air-ground, ground-ground CI systems. 73 Small Business Innovative Research/Small Business Technology Transfer Program <p>Total 2910</p> <p>FY 1999 Planned Program: Project not funded in FY 1999</p>											

Project D901

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering &
Manufacturing Development

D901

B. Project Change Summary:

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997

2836

2767

-6

2761

FY 1998

3003

3003

-93

2910

FY 1999

3006

0

Change Summary Explanation: FY 1999 (-3006) reduction due to restructure to 0604820A/project E10 to support Pre-Planned Product Improvement

C. Other Program Funding Summary: None**D. Schedule Profile**

	FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2
Demonstrate A-G capabil for AH-1W						
Demonstrate ID capability for AV-8B						
Demonstrate "nine msg" for ATHS						
Assess joint C3I interoperability						
Assess surface-air, air-air CI capabilities						
Evaluating surface-air, air-round, ground-ground CI systems						

FY 1997

2

3

X*

X*

X*

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Project D901

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604817A Combat Identification - Engineering &
Manufacturing Development D902

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D902 Dismounted Soldier CID	900	1946	5566	0	0	0	0	0	8412

A. Mission Description and Justification: The Combat Identification System for the Dismounted Soldier (CIDDS) is a lightweight, laser-based, question and answer type system, used to positively identify friendly soldiers. The system includes a compact, eyesafe, diode laser interrogator; a laser detector assembly; an electronic processor unit; and an omni-directional RF responder. The laser transmitter also includes a near infrared aiming laser pointer for aiming the soldier's weapon at night when using Night Vision Goggles and provides an embedded training capability that is interoperable with MILES/MILES 2000. The system will provide range of at least 1.1 kilometers under clear weather conditions and will exceed the soldier's target acquisition capability under degraded atmospheric conditions. It will have sufficient angular resolution to resolve individual targets, but does not require precise pointing accuracy for robust response. The system will also be directly interoperable with the integrated soldier-to-soldier combat ID functions to be embedded in the Land Warrior equipment suite. The system will fulfill requirements stated in the Operational Requirements Document for use by Army, Marine and Special Operations applications.

Acquisition Strategy: A competitive, cost plus incentive fee contract for delivery and testing of approximately 150 units for IOT.

FY 1997 Accomplishments:

- 500 Initiated hardware design effort
- 200 Initiated software design effort
- 200 Initiated weapons integration kit design
- Total 900

FY 1998 Planned Program:

- 250 Continue weapons integration kit design
- 1647 Continue hardware and software design
- 0 Initiate MILES/MILES 2000 interoperability/integration effort
- 0 Initiate Near IR aiming laser pointer interoperability/integration effort
- 49 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 1946

Project D902

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

PROJECT	D902
PROJECT NUMBER AND TITLE	0604817A Combat Identification - Engineering &

PROJECT

0604817A Combat Identification - Engineering & Manufacturing Development

FY 1999 Planned Program:

- | | | |
|-------|------|---|
| • | 1050 | Complete hardware and software design |
| • | 278 | Complete weapons integration kit design |
| • | 4238 | Conduct hardware build |
| Total | 5566 | |

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Appropriate value Adjustments to App

FY 1999 President's Budget

<u>FY 1997</u>	0	0	+906	900
----------------	---	---	------	-----

<u>FY 1998</u>	<u>FY 1999</u>
2008	2506
2008	
-62	5566
1946	

Change Summary Explanation: Funding: FY97 funding reflects program acceleration to begin E&MD. FY99 funding increase to conduct hardware build (+3060).

C. Other Program Funding Summary

RDTE, A Budget Activity 2, PE 0602120A

Proj AH15 Ground Combat Identification Tech

RDTE, A Budget Activity 3, PE 0603772A

Proj D281 Ground Combat ID Demo

RDTE, A Budget Activity 5, PE 0604817A

Proj D482 Ground CID

OPA 2, SSN BA0510 Combat Identification Prog

OPA2,BA0515 Combat I D Aiming / Light

To	Total
<u>Compl</u>	<u>Cost</u>
0	25175
0	10266
0	123126
0	91918
93857	142782

D. Schedule Profile

1	FY 1997	3	X*
2			

Complete MSII Decision

initiate hardware/software design effort

Initiate weapons integration design kit

Continue hardware/software design effort

Continue weapons integration design kit

Initiate MILES/MILES 2000 effort

	FY 1998	FY 1999
	1 2 3 4	1 2 3
X*	X	
X*	X	X
	X	X
	X	

Project D902

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		DATE		PROJECT					
5 - Engineering and Manufacturing Development		February 1998		D902					
		PE NUMBER AND TITLE							
		0604817A Combat Identification - Engineering & Manufacturing Development							
		FY 1997		FY 1998		FY 1999			
		1	2	3	4	1	2	3	4
<u>D. Schedule Profile</u>									
Initiate Near IR aiming pointer effort									
Complete hardware/software design effort						X			
Complete weapons integration design kit						X			
Conduct hardware build							X	X	X
Project D902		Page 12 of 13 Pages		Exhibit R-2 (PE 0604817A)					

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	PROJECT
BUDGET ACTIVITY						
5 - Engineering and Manufacturing Development						
PE NUMBER AND TITLE						
0604817A Combat Identification - Engineering & Manufacturing Development						D902
A. Project Cost Breakdown						
Primary Hardware Development	FY 1997	FY 1998	FY 1999			
System Engineering/Program Management Support	900	1482	5061			
Government Contractor		123	207			
Program Management Personnel		121	122			
SBIR/STTR		171	176			
Total	900	1946	5566			
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or Government	Contract					
Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	
Product Development Organization						
Motorola	CPIF	4Q97	7443	7443	FY 1997	
Support and Management Organizations					FY 1998	
Proj Management	Multiple				1482	5061
CECOM	MIPR				171	298
SBIR/STTR					244	207
					49	
Test and Evaluation Organizations:						
Government Furnished Property: Not Applicable						
Subtotal Product Development						
Subtotal Support and Management					900	5061
Subtotal Test and Evaluation					464	505
Total Project					900	5566
					1946	920
						920

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604818A Army Tactical Command and Control
Hardware & Software

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	35495	19184	32929	36641	35065	39417	37924	Continuing	Continuing
DC34 Army Tactical C2 Systems(ATCCS) Engineering	11236	7706	15968	18682	17222	17687	18009	Continuing	Continuing
DC39 Tactical Operations Centers(TOCs)	0	0	6000	6500	6300	8300	6300	Continuing	Continuing
D323 Common Hardware Software (CHS)	24259	11478	10961	11459	11543	13430	13615	Continuing	Continuing

Mission Description and Budget Item Justification: The umbrella program to exploit automation technology for the conduct of combat operations is the Army Tactical Command and Control System (ATCCS) program which is a component of the Army Battle Command System (ABCS). The ATCCS program provides automation in the five battlefield functional areas (BFAs) with the following specific systems: (1) Maneuver Control System (MCS); (2) Advanced Field Artillery Tactical Data System (AFATDS); (3) All Source Analysis System (ASAS) for Intelligence/Electronic Warfare; (4) Forward Area Air Defense Command, Control and Intelligence System (FAADC2I); and (5) Combat Service Support Control System (CSSCS) and to other Army Joint and Allied systems. To provide an overall technically sound, cost effective, and operationally responsive approach, the design and development of ATCCS must be accomplished on a total systems basis. The ATCCS Engineering program provides the required systems engineering to assure integrated Army tactical command and control, and the utilization of common hardware and software throughout the five ATCCS nodal systems. This project includes the Central Technical Support Facility(CTSF) which provides a single technical "center of mass" for software checkout and physical system integration. The Common Hardware Software (CHS) project provides common hardware and software to customers to meet their developmental and fielding needs. The Tactical Operations Centers(TOCs) project designs and develops the TOCs that form the structural backbone of the Army's digitized fielding concept. The projects in this program element support the ATCCS programs which, for the most part, are in the engineering and manufacturing development phase of the acquisition process and, therefore, are correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE							
BUDGET ACTIVITY		February 1998							
PE NUMBER AND TITLE		PROJECT							
5 - Engineering and Manufacturing Development		DC34							
0604818A Army Tactical Command and Control Hardware & Software									
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC34 Army Tactical C2 Systems(ATCCS) Engineering	11236	7706	15968	18682	17222	17687	18009	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DC34 - Army Tactical C2 Systems(ATCCS) Engineering: The Air/Land and Battle Doctrine requires military leaders to make sound and timely command and control decisions to direct the activities of assigned and supporting units. The umbrella program to exploit automation technology in support of this mission is the ATCCS program, a component of the Army Battle Command System(ABCS). The effort to achieve horizontal integration of the ATCCS BFAs, although going on independently in each BFA, was not disciplined enough to address all connections and needs within the entire spectra of command, control, and communications. Therefore, to ensure this horizontal integration effort is complete and fully automated, a significant management, systems engineering and integration effort is required. A key component of the overall effort is the Central Technical Support Facility(CTSF) which provides a centralized on-the-ground capability to ensure interoperability among various digitized platforms and serves as the final integration and maturation facility for Common Operating Environment(COE). The CTSF acts as an enabler for rapid integration of dissimilar software and hardware systems through real time on-site integration of soldiers, contractors, testers, Program Managers, and the requirements community. The CTSF provides a single technical "center of mass" for software checkout and system integration and provides a controlled environment with connectivity to other C4I systems either on-site or through the Army Interoperability Network(AIN) to support digital integration and fielding.

Acquisition Strategy: This project provides the technical and programmatic disciplines required for systems engineering and integration, experimentation, acquisition management, testing, software development, interoperability, fielding, and sustainment to insure an interoperable and affordable ATCCS. The Program Executive Officer for Command, Control, and Communications(PEO C3S) has planned an evolutionary approach to fielding ATCCS as soon as possible.

FY 1997 Accomplishments:

- 500 Performed functional analysis and update command post analysis to support ABCS and AWE
- 900 Implemented the ABCS data architecture and standardization program in all Battlefield Functional Areas(BFA) to facilitate Army Technical Architecture(ATA) compliance
- 1245 Continued ABCS/AWE system level training and logistics development
- 3415 Continued ABCS/AWE interoperability engineering and system level engineering support
- 1381 Conducted/supported system configuration development/operational demonstrations in conjunction with MCS LUT and other BFA Ots
- 500 Developed the ABCS security architecture to support Division 2000
- 3295 Army Technical Architecture definition and compliance
- Total 11236

Project DC34

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
5 - Engineering and Manufacturing Development	0604818A Army Tactical Command and Control Hardware & Software	DC34																					
<p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> • 300 Perform functional analysis and update command post analysis to support ABCS • 1250 Continue ABCS/AWE system level training and logistics development • 3213 Continue ABCS/AWE interoperability engineering and system level engineering support/performance dependency analyses and verification and validation of all BFA fielded software, including common and unique applications • 1450 Conduct and support system configuration development/operational demonstrations in conjunction with BFA tests • 800 Implement the ABCS data architecture and standardization program for all BFAs to facilitate ATA compliance • 500 Develop and implement the ABCS security architecture • 193 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR) Total 7706 <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 300 Perform functional analysis and update command post analysis to support ABCS • 1200 Continue ABCS/AWE system level training and logistics development • 3540 Continue ABCS/AWE interoperability engineering and system level engineering support/performance dependency analyses and verification and validation of all BFA fielded software, including common and unique applications • 1450 Conduct and support system configuration development/operational demonstrations in conjunction with BFA tests • 800 Continue to implement the ABCS data architecture and standardization program for all BFAs to facilitate ATA compliance • 500 Continue to develop and implement the ABCS security architecture • 8178 Central Technical Support Facility(CTSF) efforts to meet the Army's digital fielding requirements Total 15968 <p>B. Project Change Summary</p> <table border="0"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY1998/1999 President's Budget</td> <td>8159</td> <td>7951</td> <td>7790</td> </tr> <tr> <td>Appropriated Value</td> <td>7960</td> <td>7951</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>+3276</td> <td>-245</td> <td></td> </tr> <tr> <td>FY1999 President's Budget</td> <td>11236</td> <td>7706</td> <td>15968</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: FY97 (+3276) for an increase for Army Technical Architecture definition and compliance. FY99 (+8178) funding increase supports CTSF efforts to meet the Army's digitization efforts.</p>					FY 1997	FY 1998	FY 1999	FY1998/1999 President's Budget	8159	7951	7790	Appropriated Value	7960	7951		Adjustments to Appropriated Value	+3276	-245		FY1999 President's Budget	11236	7706	15968
	FY 1997	FY 1998	FY 1999																				
FY1998/1999 President's Budget	8159	7951	7790																				
Appropriated Value	7960	7951																					
Adjustments to Appropriated Value	+3276	-245																					
FY1999 President's Budget	11236	7706	15968																				

Project DC34

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604818A Army Tactical Command and Control
Hardware & Software

DC34

C. Other Program Funding Summary: Not applicableD. Schedule Profile

	FY 1997		FY 1998		FY 1999			
	1	2	3	4	1	2	3	4
ATCCS VI Operational Test and Evaluation	X*							
Participate in Task Force XXI AWE								
ATCCS Systems Confidence Demo - 7								
Participate in Division XXI AWE								
ABCS Interoperability Test								
FBCB2 LUT								
Corps/JTF								

X*

X*

X

X

X

Project DC34

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development	0604818A Army Tactical Command and Control Hardware & Software				DC34
A. Project Cost Breakdown					
System Engineering and Integration	FY 1997	FY 1998	FY 1999		
SBIR/STTR	11236	7513	15968		
Total	11236	193	15968		
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or Contract	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999
Government	EAC	FY 1997			
Performing Activity	Performing Activity				
Award or Obligation Date	EAC				
Method/Type					
Vehicle					
Product Development Organizations					
TRW			1000		725
PWD			4807		7464
CSC			1554	5325	1150
MITRE				350	3705
MANTECH				1200	2068
PWD				638	856
Misc Contracts					
PWD					
Govt Support					
Various					
Support and Management Organizations					
SBIR/STTR				193	193
Test and Evaluation Organizations					
NONE					
Government Furnished Property: NONE					
Subtotal Product Development			11236	7513	15968
Subtotal Support and Management				193	193
Subtotal Test and Evaluation					
Total Project			11236	7706	15968
					34910

Project DC34

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604818A Army Tactical Command and Control

DC39

Hardware & Software

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC39 Tactical Operations Centers(TOCs)	0	0	6000	6500	6300	8300	6300	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DC39. The Army Tactical Operations Center(TOC) program provides commanders and staff at all echelons of command from Battalion to Corps with integrated digitized command and control facilities to exploit the enhanced situational awareness and force multiplier effect gained through digitization. The objective is information dominance using interoperable, robust Army Battle Command System(ABCS) systems operating in a Defense Information Infrastructure(DII)/Common Operating Environment(COE) compliant architecture.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 2000 Sustain Division XXI prototype TOCs
- 4000 Upgrade Division XXI TOCs, system engineering, program planning, technology assessment, integrated logistics support, lab support, and other program costs

Total 6000

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
0	0	0
0	0	6000

Change Summary Explanation: Funding: FY99 (+6000) funding provided to support the formal TOC program.

C. Other Program Funding Summary

Other Procurement Army 2 - SSN: BZ9865

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
		26703	28674	27564	36329	27375	Cont	Cont

D. Schedule Profile: None

Project DC39

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BUDGET ACTIVITY					
5 - Engineering and Manufacturing Development					DC39
PE NUMBER AND TITLE					
0604818A Army Tactical Command and Control Hardware & Software					
A. Project Cost Breakdown					
Major Contracts	FY 1997	FY 1998	FY 1999		
PMO/in-house/other			4000		
Total	0	0	2000		
			6000		
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or					
Government	Method/Type	Award or	Performing	Total	
Performing	or Funding	Obligation	Activity	Prior to	
Activity	Vehicle	Date	EAC	FY 1997	
Product Development Organizations				FY 1998	
TRW	SS/CPFF	TBD		FY 1999	
TBD		TBD			
Support and Management Organizations					
In-house/Other					
Test and Evaluation Organizations					
Government Furnished Property: None					
Subtotal Product Development					
Subtotal Support and Management					
Subtotal Test and Evaluation					
Total Project					

Project DC39

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604818A Army Tactical Command and Control

D323

Hardware & Software

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D323 Common Hardware Software (CHS)	24259	11478	10961	11459	11543	13430	13615	Continuing	Continuing

A. Mission Description and Justification: Project D323 Common Hardware Software (CHS): CHS is the program through which the Army builds its integrated efforts for tying together the Army Command and Control Systems. The project provides vehicles (contracts) through which customers can acquire state-of-the-art common hardware/software and associated peripherals to meet developmental and fielding needs. The project also provides software technology support and command post internal structures within shelters. The common software supports Army, other Services and Joint systems. The CHS program is instrumental in digitizing the battlefield.

Acquisition Strategy: The overall goal is to improve interoperability and lower life cycle costs by standardizing Battlefield Command and Control (C2) automation through centralized buys of non-developmental items (NDI), standardized protocols and reusable software. Four NDI hardware versions are available to meet specific needs of each Battlefield Functional Area (BFA): handheld, portable, transportable and lightweight computer unit.

FY 1997 Accomplishments:

- 1797 Continued management of the acquisition and delivery of CHS equipment (LCU/CHS-1/CHS-2) in support of customer requirements
- 3704 Continued execution of common hardware, software technology and command post programs
- 483 Continued supporting customers testing efforts with CHS equipment
- 605 Continued exploring state of the art technology insertion in support of ABCS
- 870 Developed, integrated and upgraded Defense Information Infrastructure (DII) Common Operating Environment (COE) products
- 7200 TOC design, development, and technology assessment
- 9600 CTSF efforts in support of the Army digitization plan
- Total 24259

FY 1998 Planned Program:

- 1350 Continue management of the acquisition and delivery of CHS equipment (LCU/CHS-2) in support of customer requirements
- 3150 Continue execution of common hardware, software technology and software reuse programs
- 575 Continue supporting customers testing efforts with CHS equipment
- 610 Continue the exploration of state of the art technology insertion in support of ABCS programs
- 5548 Continue developing and upgrading DII COE products/integrate into ABCS systems
- 245 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 11478

Project D323

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604818A Army Tactical Command and Control
Hardware & Software

D323

FY 1999 Planned Program:

- 1350 Continue management of the acquisition and delivery of CHS-2 equipment in support of customer requirements
- 3150 Continue execution of common hardware, software technology and software reuse programs
- 550 Continue supporting customers testing efforts with CHS equipment
- 545 Continue exploring state of the art technology insertion in support of ABCS programs
- 5366 Continue developing and upgrading DII COE products/integrate into ABCS systems
- Total 10961

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997

7621

7476

+16783

24259

FY 1998

12071

12071

-593

11478

FY 1999

10907

10961

Change Summary Explanation:

Funding: FY97(+16783) Increase for Congressionally approved emergency reprogramming to support critical digitization requirements

C. Other Program Funding Summary: Not ApplicableD. Schedule Profile

FY 1997

1

2

3

4

X*

FY 1998

2

3

4

1

2

FY 1999

3

4

Last CHS-1 orders processed

Last LCU orders processed

CHS-2 Technology Insertion (continuous)

X

X

X

X

Project D323

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604818A Army Tactical Command and Control
Hardware & Software

D323

A. Project Cost Breakdown

System Engineering and Integration	FY 1997	FY 1998	FY 1999
Program Management Support	13400		
Contract Engineering Support	5844	4666	4635
Test and Evaluation	3815	6567	6326
SBIR/STTR	1200		
Total	24259	245 11478	10961

B. Budget Acquisition History and Planning Information**Performing Organizations**

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC
--	--------------------------------	--------------------------	-------------------------	--------------------

Product Development Organizations

Matrix-CECOM	MIPR					
Misc-Contracts	PWD	1425	2032	2017	Cont	Cont
TRW	PWD	5942	6567	6326	Cont	Cont
CSC	PWD	3500				3500
MANTECH	PWD	1116				1116
GE	PWD	3937				3937
	PWD	2500				2500

Support and Management Organizations

In-House (CHS)		2439	2634	2618	Cont	Cont
In-House(ADCCS)		2200				2200
SBIR/STTR			245			245

Test and Evaluation Property

EPG		1200				1200
-----	--	------	--	--	--	------

Government Furnished Property: None

Subtotal Product Development		18420	8599	8343	Cont	Cont
Subtotal Support and Management		4639	2879	2618	Cont	Cont
Subtotal Test and Evaluation		1200				1200
Total Project		24259	11478	10961	Cont	Cont

Project D323

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BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604820A Radar Development

PROJECT

DE10

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE10 Sentinel (FAAD GBS)	0	0	2786	5544	8593	8186	0	0	25109

A. Mission Description and Budget Item Justification: The Sentinel, AN/MPQ-64, consists of a radar-based sensor with its prime mover/power, identification friend or foe (IFF), and FAAD Command, Control, and Intelligence (C2I) interfaces. The sensor is an advanced three-dimensional battlefield X-Band air defense phased-array radar with an instrumented range of 40 km. The Sentinel is capable of operating day or night, in adverse weather conditions, in the battlefield environments of dust, smoke aerosols, and enemy countermeasures. It provides 360 degree azimuth coverage for acquisition tracking. The Sentinel contributes to the digital battlefield by automatically detecting, classifying, identifying, and reporting targets (cruise missiles, and unmanned aerial vehicles, rotary wing and fixed wing aircraft). A Pre-Planned Product Improvement (P3I) Program, which will improve Sentinel's capability against evolving threats, begins in FY99. The P3I will provide increased capabilities for the Sentinel to keep abreast of the evolving technological threat of small radar cross-section targets such as cruise missiles and unmanned aerial vehicles. The P3I will compensate for the evolving threat and ensure that the division air picture and target cues are maintained at maximum effective acquisition ranges. This project is related to an engineering and manufacturing development program and is therefore correctly placed in BA 5.

Acquisition Strategy: The pre-planned product improvement is currently planned as a sole source contract award to the production manufacturer.

FY 1997 Accomplishments: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

- 1598 Conduct Transmitter Prototype Design and Development
- 401 Test Bed System Upgrade
- 495 Integration and Test
- 292 Design and Fabrication of Developmental Tooling.
- Total 2786

B. Project Change Summary

FY 1998/1999 President's Budget
Appropriated Value
Adjustments to Appropriated Value
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
0	0	0
0	0	2786

Project DE10

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

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BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604820A Radar Development

DE10

Change Summary Explanation: Schedule -- As a result of Congressional increases in procurement funding, the Sentinel production program has been accelerated. The RDT&E funds in FY99 (+2786) for the Pre-Planned Product Improvement (P3I) program ensures efficient schedule alignment of the P3I program with the production capability. These funds prevent both a loss of production capability and an increase in cost.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement, Army 2 (SSN WK 5053)	68877	59447	58247	49567	26987	24332	2494	31361	321312
Other Procurement, Army 2 (SSN WK 5057)					9265	9707	30247		49219
Spares (SSN BS 9732)	3610	5258	7181						16049

D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
Conduct Transmitter Prototype Design and Development	1	2	3	4	1	2	3
Test Bed System Upgrade					X	X	
Integration and Test					X		
Design and Fab of Developmental Tooling							X

Project DE10

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604823A Firefinder								DL85	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DL85	Firefinder Pre-Planned Product Improvement	2430	2484	19822	33448	39000	5788	0	0	102972	
<p>A. Mission Description and Budget Item Justification: The Firefinder Block II Pre-Planned Product Improvement (P3I) program will replace the AN/TPQ-37 Artillery Locating Radar. This program is in response to the approved Mission Need Statement (MNS) for the Advanced Firefinder System which describes an urgent need for a more survivable, longer range and less manpower intensive radar. An Operational Requirements Document (ORD) for Firefinder AN/TPQ-37 Block II was approved 25 Sep 96. Firefinder Block II will double the current range performance and improve the target throughput to 50 targets per minute in a highly mobile, transportable and survivable system. The Firefinder Block II will be capable of missile detection at maximum ranges of 150-300 km and will be capable of interfacing with Theater Missile Defense Systems. The system will be capable of C-130 roll-on/roll-off transportability for rapid deployment. Crew size will be reduced. This program will leverage off the AN/TPQ-36(V)8 Electronics Upgrade program by using the same man-machine interface. The Firefinder Block II will be integrated into the targeting structure by interfacing with the Advanced Field Artillery Tactical Data System (AFATDS).</p> <p>Acquisition Strategy: A competitive EMD contract will be awarded for the Firefinder Block II program. Award is scheduled for April 1998.</p> <p>FY 1997 Accomplishments:</p> <ul style="list-style-type: none"> 891 Awarded multiple study contracts for evaluation of program risks and cost/performance trade-offs 343 Prepared program and cost documentation to support a Milestone II decision 437 Prepared Analysis of Alternatives (AOA) and Threat Analysis 509 Prepared and released draft solicitation for industry comment 250 Initiated development of simulator to model radar capabilities <p>Total 2430</p> <p>FY 1998 Planned Program:</p> <ul style="list-style-type: none"> 222 Complete development of simulator to support evaluation of radar performance 185 Finalize and issue solicitation for EMD contract award 620 Conduct Source Selection Evaluation Board (SSEB) 1394 Award EMD contract and initiate hardware/software design of new radar 63 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR) <p>Total 2484</p>											

Project DL85

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																														
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																															
5 - Engineering and Manufacturing Development	0604823A Firefinder	DL85																															
FY 1999 Planned Program: <ul style="list-style-type: none"> 3942 Complete development of hardware design 5218 Continue development of software design and integrate with the AN/TPQ-36(V)8 Electronics Shelter 10662 Order parts and begin fabrication of three (3) prototypes 																																	
Total	19822																																
B. Project Change Summary <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>2496</td> <td>2564</td> <td>12022</td> </tr> <tr> <td>Appropriated Value</td> <td>2435</td> <td>2564</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-5</td> <td>-80</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>2430</td> <td>2484</td> <td>19822</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	2496	2564	12022	Appropriated Value	2435	2564		Adjustments to Appropriated Value	-5	-80		FY 1999 President's Budget	2430	2484	19822										
	FY 1997	FY 1998	FY 1999																														
FY 1998/1999 President's Budget	2496	2564	12022																														
Appropriated Value	2435	2564																															
Adjustments to Appropriated Value	-5	-80																															
FY 1999 President's Budget	2430	2484	19822																														
Change Summary Explanation: Funding: FY98 decrease (-80) due to undistributed Congressional adjustments. FY99 increase was provided to meet the required Initial Operating Capability (IOC) (+7800)																																	
C. Other Program Funding Summary <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>To Compl</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>Other Procurement, Army 2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>93307</td> <td>188860</td> <td>458000</td> <td>740167</td> </tr> <tr> <td>SSN: BA5100 Firefinder P3I</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	Other Procurement, Army 2						93307	188860	458000	740167	SSN: BA5100 Firefinder P3I									
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost																								
Other Procurement, Army 2						93307	188860	458000	740167																								
SSN: BA5100 Firefinder P3I																																	

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT	DL85		
BUDGET ACTIVITY										PE NUMBER AND TITLE					
5 - Engineering and Manufacturing Development										0604823A Firefinder					
D. Schedule Profile															
Award multiple study contracts										FY 1997		FY 1998		FY 1999	
Prepare Analysis of Alternatives (AOA)										1 2 3 4		1 2 3 4		1 2 3 4	
Initiate development of simulator										X*					
Prepare and release draft solicitation										X*					
Obtain Milestone II Approval										X*					
Finalize and issue solicitation for EMD										X*					
Complete development of simulator										X					
Conduct SSEB										X		X			
Award EMD Contract										X		X			
Complete hardware design														X	
Begin prototype fabrication														X	
*Denotes Completed Milestone															

Project DL85

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Exhibit R-3 (PE 0604823A)

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604823A Firefinder

PROJECT

DL85

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Specification/Technical Parameters Development	1578	222	
Primary Hardware Development		1035	17693
System Engineering			
Government	521	117	703
Contractor	191	262	629
Source Selection Evaluation Board		620	
Program Management Personnel	140	165	540
Test and Evaluation			257
SBIR/STTR		63	
Total	2430	2484	19822

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
EMD-TBD	C/CPIF	Apr 98					1035	17693	61756	80484
Trainer-TBD	C/CPIF	Nov 00							7657	7657
Misc Contracts	Various					1353	222			1575
CECOM	MIPR					225				225
CECOM-SSEB	MIPR						328			328
Contractor-SSEB	Various						292			292
Support and Management Organizations										
Misc Contracts	Various						262	629	2002	3084
CECOM	MIPR					191	282	1243	2413	4599
SBIR/STTR						661	63			63
Test and Evaluation Organizations										
CECOM	MIPR							257	4408	4665

Government Furnished Property: Not Applicable

Project DL85

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		DL85		
5 - Engineering and Manufacturing Development	0604823A Firefinder				
	Total				
	Prior to				
	FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete
		1578	1877	17693	69413
		852	607	1872	4415
				257	4408
		2430	2484	19822	78236
					102972
Subtotal Product Development					90561
Subtotal Support and Management					7746
Subtotal Test and Evaluation					4665
Total Project					102972

Project DL85

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604824A Commercial Operating & Support

D112

Savings Initiative (COSSI)

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D112 Commercial Operating & Support Savings Initiative*	0	0	33600	31800	31850	31800	31900	Continuing	Continuing

*FY 1999 funding level is due to an administrative database error. In FY 1999, the program will be decreased \$5.1M below threshold to reflect proper funding level of \$28.5M (\$3.9M will be reprogrammed to PE 0604280A, Joint Tactical Radio Systems, and \$1.2M to PE 0603780A, SERDP, to correct database error).

A. Mission Description and Budget Item Justification: The mission of Commercial Operations and Support Savings Initiative (COSSI) is to develop and test a method for reducing Army Operations and Support (O&S) costs by routinely inserting commercial items into fielded military systems. The insertion of commercial items is expected to reduce O&S costs by reducing the costs of parts and maintenance, reducing the need for specialized equipment, increasing reliability, and increasing the efficiency of subsystems. An appropriate fielded military system is one that has some current operational capability and is not near the end of its useful life. Selected proposals will develop, manufacture, and deliver prototype "kits" to the military for installation into a fielded Army system. Each kit will consist of a commercial item, or a combination of items, and readied for insertion or use in a fielded military system. COSSI seeks proposals submitted by firms or teams that include at least one for-profit firm. Proposals must also include the written support of a "Military Customer" who has the authority to modify the system and purchase the kits. COSSI is a two-stage process. In Stage I of each selected project, COSSI and the chosen proposer will share the costs of developing and testing the kit, with the proposer contributing at least 25% of the estimated costs of Stage I. If Stage I is successful, Stage II will be initiated. In Stage II, the military customer may then purchase reasonable production quantities of the kit. Payment for the kits and their insertion into the fielded system will be the responsibility of the military customer. Prior to FY1999, COSSI was funded in DOD PE 0603805E.

This program element is assigned to budget activity 5 since it involves the engineering and manufacturing development necessary to integrate commercial items with already fielded systems.

FY 1997 Accomplishments: Program funded in DOD PE 0603805E.

FY 1998 Planned Program: Program funded in DOD PE 0603805E.

FY 1999 Planned Program: FY 1999 funding will be for new Stage I COSSI projects. Some examples of possible Stage I efforts are improved inspection/testing techniques, information processing and distribution, automated software change distribution, automated condition assessment and reporting, inventory tracking/asset visibility, interactive electronic technical manuals, embedded training/distance learning, component refurbishing techniques, equipment power reduction, calibration and measurement techniques, modeling and simulation, and voice activation. Any idea to reduce the Operations and Support costs of fielded military systems by inserting a commercial item while maintaining or improving its operation is a possible COSSI Stage I project.

- 33600 - Develop, manufacture and deliver cost savings initiatives in the area of product re-engineering
- Develop, manufacture and deliver cost savings initiatives in the area of information technology.
- Develop, manufacture and deliver cost savings initiatives in the area of training.

Project D112

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Exhibit R-2 (PE 0604824A)

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604824A Commercial Operating & Support Savings Initiative (COSSI)	D112	
FY 1999 Planned Program: (continued)			
- Develop, manufacture and deliver cost savings initiatives in the area of automation.			
- Develop, manufacture and deliver cost savings initiatives in the area of rapid prototyping for spares.			
Total	33600		
B. Project Change Summary			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		0	0
Adjustments to Appropriated Value			
FY 1999 President's Budget		0	0
			33600
Change Summary Explanation: Funding: FY1999 - Program transferred from DOD to Army.			
Project D112		Exhibit R-2 (PE 0604824A)	

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
BUDGET ACTIVITY										February 1998
PE NUMBER AND TITLE										
5 - Engineering and Manufacturing Development										
0604854A Artillery Systems - Engineering Development										
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	0	0	100	55410	338811	434734	272113	Continuing	Continuing	
D509 ATCAS (LW 155 Towed Howitzer)	0	0	0	5000	10600	5300	7700	0	28600	
D503 Crusader - ED	0	0	0	50000	327021	429225	260928	Continuing	Continuing	
D2KT Crusader Operational Test	0	0	100	410	1190	209	3485	Continuing	Continuing	

Mission Description and Budget Item Justification: This program element supports the engineering and manufacturing development efforts for the Crusader-ED program and Crusader Operational Test. The Light Weight (LW) 155mm Towed Howitzer, a joint program with the Marine Corps, will provide the replacement for the M198, 155mm Howitzer and achieve significant strategic and tactical mobility improvements. The projects in this program support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604854A Artillery Systems - Engineering Development

D2KT

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2KT Crusader Operational Test	0	0	100	410	1190	209	3485	Continuing	Continuing

A. Mission Description and Justification: Project D2KT Crusader Operational Test: Crusader operational testing will be conducted to answer issues relating to system effectiveness and suitability. Testing will be performed using simulations and physical testing to project Crusader capabilities from section level (individual howitzer or resupply vehicles) to platoon, battery and battalion levels to determine Crusader mission effectiveness and force structure suitability.

Acquisition Strategy: Not applicable

FY 1997 Accomplishments: Project not funded in FY97

FY 1998 Planned Program: Project not funded in FY98

FY 1999 Planned Program:

- 100 Conduct Crusader crew station tests with soldiers in operational scenarios.

Total 100

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
0	0	499

0	0	100
---	---	-----

Change Summary Explanation: Decrease (-399) in FY99 is due to the revised Acquisition Program Baseline.

C. Other Program Funding Summary

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
229561	312019	310881	305967	125129	429225	260928	Cont	1283557
			50000	327021	42341	97356	Cont	Cont
					33548	81763	Cont	Cont

Project D2KT

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE _____

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604854A Artillery Systems - Engineering Development

PROJECT

D2KT

D. Schedule Profile

D. Schedule Profile

1	2	3
FY 1997		

1.4

FY 1998
2 3

FY 1999	3	X
2		

1

4

83

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1

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D.

Project D2KT

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604854A Artillery Systems - Engineering Development

D2KT

	FY 1997	FY 1998	FY 1999
A. Project Cost Breakdown			
Product Development			
Support and Management			
Test and Evaluation			100
Total	0	0	100

B. Budget Acquisition History and Planning Information:**Performing Organizations**

Contractor or

Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations										
TECOM, YPG,								100	Cont	Cont
AZ, CSTA, APG,										
MD, Ft. Sill, OK,										
OPTEC, VA										

Project Office EAC

Total Prior to FY 1997

FY 1997

FY 1998

FY 1999

Budget to Complete

Total Program

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project D2KT

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*	HQ, PACOM, R&D Requirements (J531), BOX 15, USPACOM Staff, Camp H.M. Smith, HI, 96861
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* Commander, US Army Medical R&D Command, ATTN: SGRD-PR, Fort Detrick, Frederick, MD 21701-5012
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* CMTD, Army Field Artillery School, ATTN: ATSF-CSP, ATSF-CBL, Ft. Sill, OK 73503-5600
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* Program Manager, Instrumentation, Targets and Threat Simulators, ATTN: AMCPM-ITTS, 12350 Research Parkway, Orlando, FL 32826	
* Program Manager, Tank Main Armament Systems, ATTN: AMCPM-TMD PMD, Picatinny Arsenal NJ 07806-5000	
* Program Executive Officer, Missile Defense, ATTN: SFAE-MD-DP-P, Building 5250, Redstone Arsenal, Alabama 35898-5750	
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